Dedication of the Statue of Philo T. Farnsworth

Presented by the State of Utah

Proceedings in the U.S. Capitol Rotunda
May 2, 1990

Philo Taylor Farnsworth

1906–1971

Philo Taylor Farnsworth

Inventor of Television

101ST CONGRESS, 2D SESSION HOUSE DOCUMENT 101–188

Acceptance and Dedication
of the Statue of

PHILO T. FARNSWORTH

Presented by the
State of Utah

Proceedings in the Rotunda of the
United States Capitol
Washington, DC

May 2, 1990

Printed by the United States Government Printing Office
Washington, DC : 1991

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101st Congress, 2d Session

H. Con. Res. 226

IN THE HOUSE OF REPRESENTATIVES OF THE UNITED STATES

November 14, 1989

Received and referred to the Committee on House Administration

CONCURRENT RESOLUTION

Providing for acceptance of a statue of Philo T. Farnsworth, presented by the State of Utah, for placement in National Statuary Hall, and for other purposes.

Resolved by the House of Representatives (the Senate concurring), That

(a) the statue of Philo T. Farnsworth (the father of television), furnished by the State of Utah for placement in National Statuary Hall in accordance with section 1814 of the Revised Statutes of the United States (40 U.S.C. 187), is accepted in the name of the United States, and the thanks of the Congress are tendered to the State of Utah for providing this commemoration of one of its most eminent personages.

(b) The State of Utah is authorized to use the rotunda of the Capitol on May 2, 1990, at 11:00 o'clock, ante meridiem, for a presentation ceremony for the statue. The Architect of the Capitol and the Capitol Police Board shall take such action as may be necessary with respect to physical preparations and security for the ceremony.

(c) The statue shall be displayed in the rotunda of the Capitol for a period of not more than six months, after which period the statue shall be moved to its permanent location in National Statuary Hall.

Section 2. The transcript of proceedings of the ceremony shall be printed, under the direction of the Joint Committee on the Library, as a House document, with illustrations and suitable binding. In addition to the usual number, there shall be printed 6,555 copies of the document, of which 450 copies shall be for the use of the House of Representatives, 105 copies shall be for the use of the Senate, 3,500 copies shall be for the use of the Representatives from Utah, and 2,500 copies shall be for the use of the Senators from Utah.

Section 3. The Clerk of the House of Representatives shall transmit a copy of this concurrent resolution to the Governor of Utah.

Attest:
DONNALD K. ANDERSON, Clerk.
Passed: House of Representatives,
February 27, 1990.
Senate, March 5, 1990.

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STATUARY IN THE UNITED STATES CAPITOL REPRESENTING THE STATE OF UTAH

Brigham Young

On June 1, 1950, the marble statue of Brigham Young, the great colonizer of the mountain west and the first governor of Utah Territory, sculpted by Mahonri M. Young, was placed in Statuary Hall as Utah's first honoree.

Philo T. Farnsworth

On May 2, 1990, the bronze statue of Philo T. Farnsworth, one of the great electronic inventors of the twentieth century and the "Father of Television" created by James R. Avati, was placed in Statuary Hall as Utah's second honoree.

NATIONAL STATUARY HALL

The law creating Statuary Hall in the United States Capitol and providing for contribution of statues by the states is the act of July 2, 1864 (Title 40, Sect. 187, United States Code) and signed by President Abraham Lincoln. The law provides that:

"Suitable structures and railing shall be erected in the old hall of Representatives for the reception and protection of statuary, and the same shall be under the supervision and direction of the Architect of the Capitol. And the President is hereby authorized to invite each and all the States to provide and furnish statues, in marble or bronze, not exceeding two in number for each State, of deceased persons who have been citizens thereof, and illustrious for their historic renown or for distinguished civic or military services such as each State may deem to be worthy of this national commemoration; and when so furnished, the same shall be placed in the Old Hall of the House of Representatives, in the Capitol of the United States, which is set apart, or so much thereof as may be necessary, as a national statuary hall for the purpose herein indicated."

Subsequent provision, House Concurrent Resolution 47 (47 Stat. Part 2, 1784; February 24, 1933) states:

"That the Architect of the Capitol, upon the approval of the Joint Committee on the Library, with the advice of the Commission of Fine Arts, is hereby authorized and directed to relocate within the Capitol any of the statues already received and placed in Statuary Hall, and to provide for the reception and location of the statues received hereafter from the States."

The Governor and Mrs. Norman H. Bangerter
of the State of Utah
and the
Philo T. Farnsworth Statuary Hall Commission
proudly request the honor
of your presence at the
unveiling and presentation ceremonies
of the statue of

PHILO TAYLOR FARNSWORTH

on the morning of
May 2, 1990
at
eleven o'clock
in the Rotunda
at the United States Capitol
Washington, D.C.

Reception Immediately Following,
Senate Caucus Room
in the Russell Senate Office Building

R.s.v.p. by April 16
Card enclosed

Admittance by
ticket only

PROGRAM

Incidental Music

String Ensemble from the U.S. Marine Band

Presentation of the National Colors and the Utah State Flag

Joint Armed Services Color Guard

Master of Ceremonies

The Honorable Norman H. Bangerter

Governor of Utah

Invocation

Most Reverend William Weigand

Roman Catholic Bishop of Salt Lake City

Philo T. Farnsworth, the Public View

Dr. Bruce R. Barnson

Philo T. Farnsworth Statuary Hall Commission Chair

Music

Ridgecrest Elementary Community Choir

Conductor: Judi Christopherson

Accompanist: Nancy Boyer

"When A Man Has a Dream"—*Lyrics and Music: Janice Kapp Perry*

"This is Utah"—*Lyrics: Janice Kapp Perry*—*Music: Val C. Wilcox*

Philo T. Farnsworth, Inventor and Scientist

Dr. Stephen L. Carr

Philo T. Farnsworth Statuary Hall Commission Member

Remarks, Utah Congressional Delegation

The Honorable E. Jake Garn

The Honorable Orrin G. Hatch

The Honorable James V. Hansen

The Honorable Howard C. Nielson

The Honorable Wayne Owens

Presentation of Sculpture

The Honorable Norman H. Bangerter

Mrs. Philo Taylor Farnsworth

James Avati

Acceptance

The Honorable Thomas S. Foley, Speaker of the House

Music

"Utah We Love Thee"

String Ensemble from the U.S. Marine Band

Benediction and Dedicatory Prayer

President Gordon B. Hinckley

Member, First Presidency Church of Jesus Christ Latter Day Saints

GOVERNOR OF UTAH
NORMAN H. BANGERTER

Governor BANGERTER. The Joint Armed Services Guard will present the flag, the colors.

[The colors were presented by the Joint Armed Services Color Guard.]

Governor BANGERTER. Will you please join us in the Pledge? [Governor Bangerter led the Pledge of Allegiance.]

I pledge allegiance to the Flag of the United States of America, and to the Republic for which it stands, one Nation under God, indivisible, with liberty and justice for all.

Governor BANGERTER. Please be seated. Speaker Foley, distinguished guests, fellow Utahns and others here with us today, it is with great pleasure that I welcome you here for the ceremony.

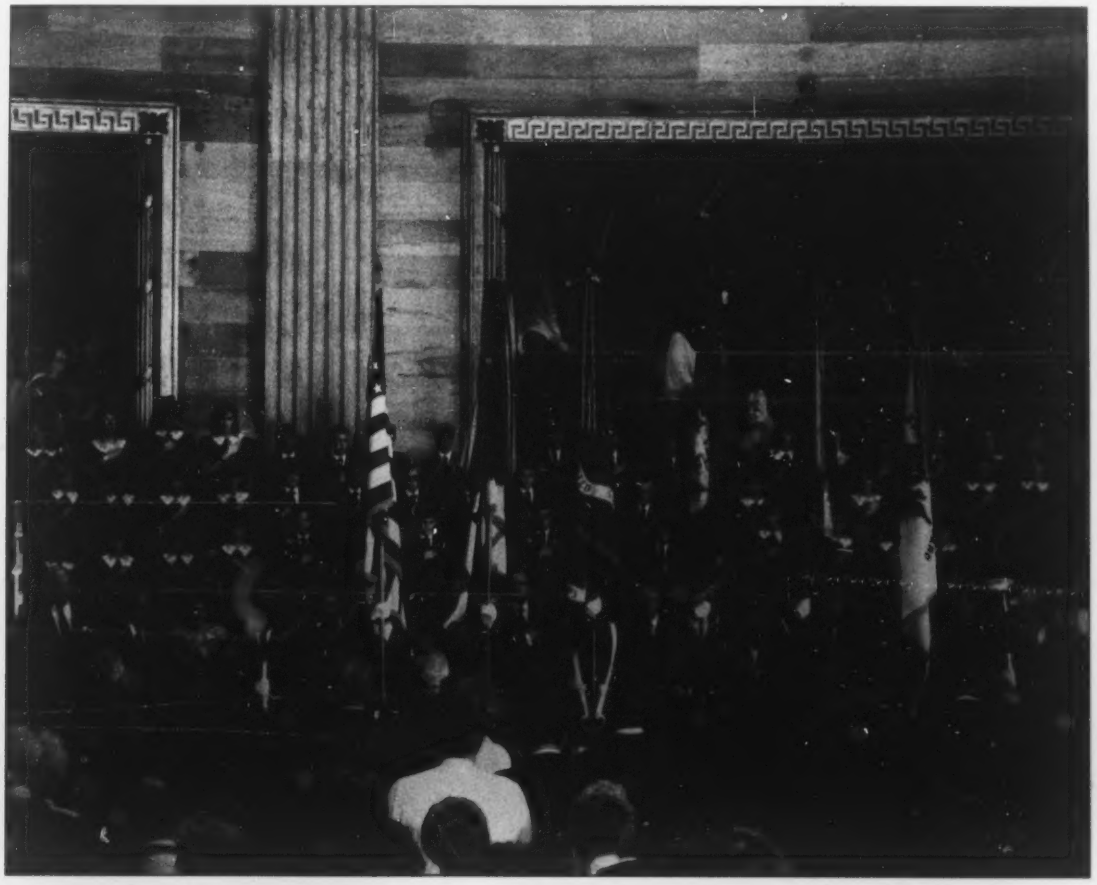
We are here today to honor a native son of Utah whose achievements have had global significance.

Philo T. Farnsworth, known as the father of television, was a young student in secondary education when he outlined most of his television theory and system. During his lifetime, Mr. Farnsworth amassed approximately 160 patents and many other inventions, which he

had neither the time nor the money to pursue. He was an inventor of dazzling creativity and ingenuity, and today we are here to add his monument to that of another Utahn whose life had great significance, Brigham Young, the original colonizer.

I might add that I believe we have with us former Senator Glade Sowers. Glade, would you stand, and Glade was here, and he was also former Speaker of our House when the Brigham Young statue was set; is that correct, and sang at that ceremony, and that was not before the turn of the century. So, Glade's O.K. We didn't have to raise him from the dead to bring him, but we are pleased to have him with us.

Our invocation will be given by the Most Reverend William Weigand, the Catholic Bishop of Salt Lake City. We are delighted that he could join us today.



BISHOP WILLIAM WEIGAND

Bishop WEIGAND. Dear friends, the prophet Joel spoke of a day when young men would dream dreams and old men would see visions. Today we gather to honor Philo T. Farnsworth, a fellow Utahn and one who had a very special dream and the persistence to realize his vision. We begin this day of dedication and tribute in prayer. Let us still our busy minds and enter the silence of our hearts as we seek the presence of God, the author of our dreams and the source of our visions.

Blessed are you, Lord God, Creator of the human heart. Through your goodness you have given us minds intrigued by mystery and a spirit that craves to make real the fruits of our imaginings. Heavenly Father, to you we turn and to you we give thanks, for you have endowed us with the gifts of ingenuity and creativity. The human mind inquires into the mysteries of the universe and again and again marvels at the majesty of your plan. Our spirit quests for new knowledge and delights in wonder at each new insight. We come together this special day to recognize the creativity and ingenuity of Philo T. Farnsworth, the father of modern television.

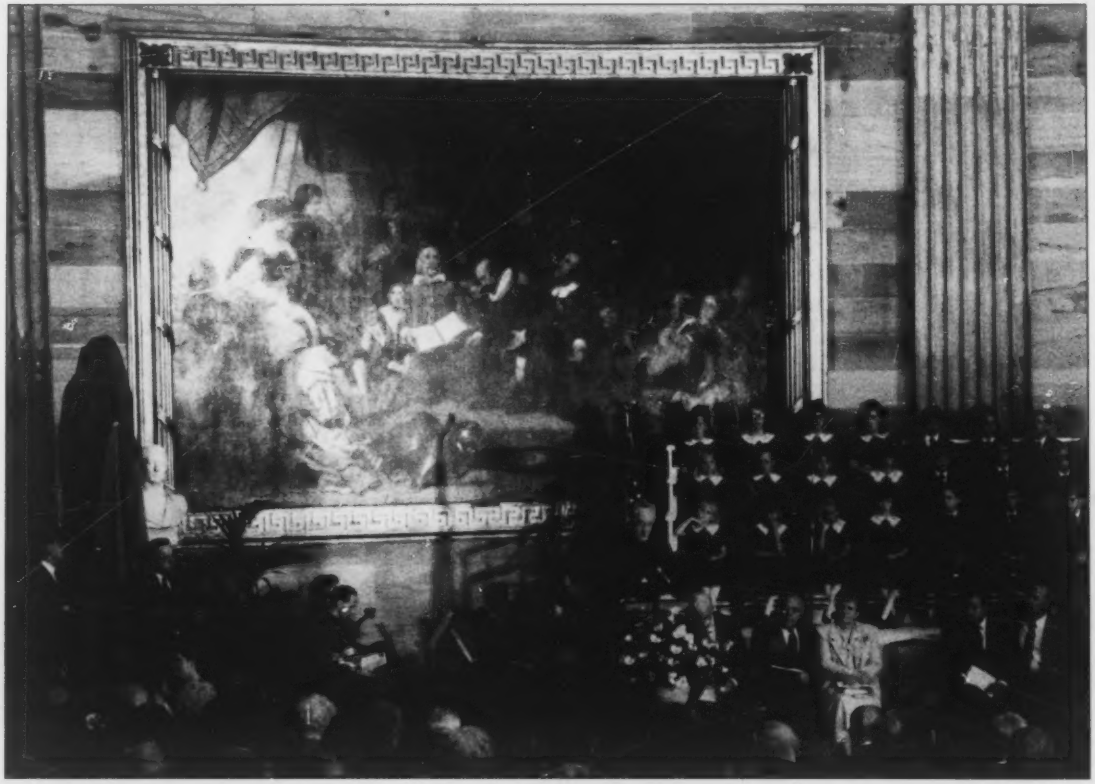
He was a man shaped by the desert land of Utah where all things are precious and where your majesty and power unfold each day in awesome beauty. In days of old it was amid the deserts and mountains that your people were shaped by your love. It was amid our deserts and mountains that Philo T. Farnsworth began to dream of a day when the human image could be transmitted and received over great distances. He was a man shaped by our pioneer heritage where nothing came easily and all things were achieved by persistence and hard work. His inventive spirit, born from a people who toiled long and never lost sight of their original dreams, used the tools of science to invent new ways for us

to communicate ever more effectively. We honor Dr. Farnsworth, too, for his contributions to radar, to the electron microscope, and also to the medical field.

It is significant that it was school children, the posterity of our pioneers, who recognized Philo T. Farnsworth as a great Utahn and called upon our state leaders. Our pioneer past now draws us into the future. We thank you, God of all creation, source of life, for Utah's children and their vision.

Lord God, touch our inquiring minds with your spirit as you once touched Philo T. Farnsworth. Fill us with an unquenchable thirst for knowledge and truth. Keep our hearts restless and our spirits questing until our hearts find rest in you and our spirits' quest ends in your love. Amen.

Governor BANGERTER. Our first speaker today will be Dr. Bruce Barnson who has served as chairman of the Philo T. Farnsworth Statuary Hall Commission. Dr. Barnson was principal of the Ridgecrest Elementary School when the students from the fifth grade presented a resolution to the Utah Legislature calling for their selection of Philo T. Farnsworth as the State's second citizen to be honored. It is my pleasure to introduce Dr. Barnson.



DR. BRUCE BARNSON

Dr. BARNSON. Speaker Foley, Governor and Mrs. Bangerter, honored guests, and especially the Farnsworth family, it is a pleasure to talk to you today about how this statue came to be and the people and events that shaped this ceremony we are about to witness. I think it is an honor long overdue as far as Dr. Farnsworth is concerned.

Ladies and gentlemen, it is a long way from Indian Creek, 1906, to this place of honor this day, 1990. In those 84 years, this man's inventive genius has literally remade the world we live in. But it is not, however, my task to talk about Philo Taylor Farnsworth, the father of television, but rather to talk about the events that bring us together today to celebrate this man this day. But, in order to celebrate Dr. Farnsworth, one must celebrate some other factors that contributed to the statue that we are about to see unveiled.

First, I would like to celebrate the legislative process and the men and women of the Utah State Government who took the time to encourage a group of students from Ridgecrest Elementary School who came to them and said, "We would like to learn this process by doing it." They started this trek by introducing a resolution to name a State insect. Second, they worked on the seat belt legislation, and then a resolution on nuclear waste. Finally, they came to the Hill and proposed the bill that named Dr. Philo Farnsworth as Utah's second statue. To give you a little background how this came about: We were searching for a project one day when we heard Senator Hatch, who was playing reporter for a day on KSL radio, say, "Isn't it too bad that Utah, we are authorized two statues back in Washington, and we only have one, that of Brigham Young, and that was placed 35 years ago, in 1950." That started us thinking about that as a project for our kids. We proposed the idea to them, and they loved it.

The students started out by searching the Utah history books looking for those people

who could represent Utah in a distinguished way, someone who had brought honor to themselves and to the State as well. There were 21 that we selected as prominent Utah citizens. From those 21, we submitted those names to 25 randomly selected Utah elementary schools and asked those schools to select the three that they thought were the most prominent. From those 15 that were mentioned at least one time, we sent those to at least 400 homes in the Sandy, Utah, area, who made a second selection. Philo Farnsworth was again the most prominent name mentioned. A third check was a face to face interview with randomly selected adults in downtown Salt Lake Crossroads Mall. When all three cross-checks were tallied, Dr. Philo T. Farnsworth was the choice of the citizens of Utah, and I celebrate the legislative process and those Utah lawmakers who took the time to help these students with this process.

Next, I would like to celebrate Utah's public school system. Bright, resourceful, intellectually talented students don't just happen. They are the product of great homes, but also the product of hard-working, sacrificing teachers who give their lives to see students achieve.

Philo's patents by a great teacher, Justin Tolman, and his recognition today is a result of educators wanting to see students live a dream.

Finally, I would like to celebrate the team process. No one person could pull off something like this.

Once the legislation was signed, Governor Bangerter selected a commission to make this dream a reality. I have in my log that our first meeting was May 11, 1987, room 305 of the Utah State Capitol Building. At that time we elected a chairman, discussed the scope of our charge from the Governor and set a timeframe to complete this project. Suffice it to say, none of us expected it to take three years.

I would like to introduce to you the people who have given three years of their time and energy to fairly select an artist, a foundry, raise the funds from the general public to support this project and to see every detail of what you are about to witness today. I love and respect this group of people, and it is my pleasure to introduce them to you.

As I read your name, commission, would you stand and remain standing until you are all introduced?

First I would like to introduce our team leader, the Honorable Governor, Norman H. Bangerter, and, in alphabetical order: Mr. Ray Adair, Mrs. Colleen Bangerter, Utah's First Lady, Dr. Stephen Carr, Mr. Ned Christensen, Ms. Shelly Cordon, who is not here today, I'm sorry; Representative Don LeBaron, Utah State House of Representatives, Mr. Randall Mackey, Former Governor Scott M. Matheson, who is also not able to be here today, who is our fundraising chairman, Mr. Gary Smith, Mr. Frederick Sorensen, Mr. Grant Speed, Ms. Marianne Stoddard, Senator Richard Tempest, Utah State Senate, Ms. Claudia Ward, Dr. Raymond Whittenburg, and Representatives from our Utah Delegation, Senator Orrin Hatch, Representative Wayne Owens. Associate members: Mr. Frank McEntire, Mr. Neil Hadlock, who is our consultant from the foundry, Mrs. Judy Schiffman, a special assistant to us, and from the Washington office Miss Deborah Turner.

I would like to pay special tribute to Debbie and her staff here in Washington. We could not have done this without them.

Can we give this group a hand?

[Applause.]

Thank you for being here today in helping us celebrate Philo T. Farnsworth. I appreciate this opportunity to share some of my thoughts with you. My deep thanks to our citizens of Utah, our pretty great state, and others who have contributed so generously of their time and money to make this day possible, and again, Commission, well, you know how I feel about you.

Thank you.

Governor BANGERTER. Thank you, Dr. Barnson.

We are now pleased to have our choir from Ridgecrest Elementary School, and this is representative of the great young people we have in our State, and they are going to sing for us "When a Man has a Dream" and "This is Utah," written by Janice Kapp Perry, and following their songs, we are going to hear from Dr. Stephen L. Carr, a member of the Commission.

[Two songs were sung by the Ridgecrest Elementary Community Choir, conducted by Judi Christopherson and accompanied by Nancy Boyer.]

Ridgecrest Elementary Community Choir, conducted by Judi Christopherson.

DR. STEPHEN L. CARR

Dr. CARR. Mr. Speaker, honorable Senators and Congressmen, Governor Bangerter, ladies and gentlemen and children.

Philo T. Farnsworth was born in a humble log house in Indian Creek, Utah, near Beaver City, the county seat of Beaver County in southern Utah, on August 19, 1906. He was named for his grandfather, Philo Taylor Farnsworth I, one of the leading Mormon pioneers who were sent to settle southern Utah. Philo's father, Lewis Farnsworth and mother, Serena Bastian, although of humble circumstances, wanted to be certain they did what they could to encourage learning in their family.

At the age of 6 years, Philo was intrigued with the workings of the Bell telephone and the Edison gramophone. After many hours of discussion with his father, who explained that Thomas Edison and Alexander Graham Bell had invented these wonderful devices in the not too distant past, Philo decided to become an inventor.

By the time he was 12 years old, he had devoured the contents of several technical and radio magazines that his father had procured. He was rapidly gaining an understanding of the world of the electron far and above what most boys his age (and men much older) could begin to grasp.

His first real invention, at age 13, was in response to an ad in one of the magazines. He designed a magnetic thief-proof lock, and won a national contest.

By this time, 1920, he and his family had moved to the Snake River country around Rigby, Idaho. When he demonstrated that he could manage and maintain the lighting system on the farm, he was put in charge of it, which added to his wealth of knowledge of electricity.

By 1920, several inventors around the country were attempting to transmit visual images by means of a mechanical whirling disk scanning system. To Philo's mind, this was entirely too slow, crude and clumsy to be of any use, knowing how fast light waves traveled and electricity operated. But, for the next two years, along with his school work and farm chores, he thought intensely about how electrons could be harnessed to transmit these images.

At age 15, as a high school freshman, after having talked the senior Chemistry teacher of Rigby High School, Justin Tolman, into letting him take the senior chemistry class in which he excelled, an event happened that showed the discipline of his thinking and his understanding of electronics. Philo and Justin Tolman had spent many hours discussing his theories, and one day, from his notebook he drew on the blackboard some sketches of how electrons from a photo-electric cell (an apparatus that changes light energy into electrical energy) could be utilized in a cathode-ray tube (which converts electrical energy into a glowing light) and could transmit images or pictures through the air. This concept, drawn out in a schematic diagram, with some appropriate mathematics, was quite amazing, coming from a 15 year old boy. Mr. Tolman was impressed, and retained the pages from Philo's notebook.

In 1923, the family moved to Provo, Utah, where Philo finished high school and also took physics classes by correspondence from the University of Utah.

Tragedy fell in January 1924, when Philo's father died, and Philo, now known as Phil, needed to help support the family. He left Provo, went to Salt Lake City and met George Everson and Leslie Gorrell, who were organizing the Community Chest of Salt Lake City. While working for them, Phil, with intensity burning within him, explained how an electronic television system could work. By 1926, Everson had arranged some financial backing for Phil, who then married his Brigham Young University college sweetheart, Pem Gardner, and they left for California.

Phil was set up in a laboratory on Green Street in San Francisco, just below Nob Hill. His most trusted assistants were his wife, Pem, and his best friend, Cliff Gardner, Pem's brother. With some grant money and a year's time to see what he could do, Phil worked in earnest to prove his theory. Three weeks short of the deadline, in the fall of 1927, Phil was able to transmit and receive with his hand-blown glass tubes, wires and metallic coatings, a real, recognizable image. Local electrical engineers and professors were amazed. They called him a "miracle worker," the "genius of Green Street."

With this degree of success, more funds became available, and in May 1928, a good two dimensional picture was received through the air from the transmitter, and was transformed into a light image at the end of a tube in the receiver. The first subject that was thus transmitted with this new art of television was the face of his own wife, Pem. Much of the success of this new form of light transmission depended on developing various kinds of electronic vacuum tubes and in getting them to work properly. These included the scanning of a transmittal signal which allowed the picture on the television tube to be reproduced accurately. Tubes were designed to synchronize each successive line of the hundreds of tiny lines on a television screen to reproduce the picture at exactly the correct moment. Then it was necessary to magnetically direct a beam of electrons to be brought into sharp focus.

Then, one of the smart things Phil did, was to secure patents on every new piece of equipment he invented or when he improved upon one of his earlier inventions.

In 1928, he also developed the first electron microscope, using principles of electronics that were far beyond most scientists' awareness at the time, and beyond most people's comprehension even now. He built this device to see why the molecular coating on some of his tubes wasn't behaving as he thought it should. A distinguished scientist from General Electric, who visited his laboratory, was astonished at this microscope and proclaimed that it had more far-reaching applications than Farnsworth's television ideas. Phil was too involved with the television concept, however, and never did more with the electron microscope, although he could see how it would have great use in the medical field. The electron microscope has since been developed to a high degree of sophistication in medical and scientific endeavors, using Farnsworth's original work.

By 1934, television was developing from two directions. RCA, under the direction of David Sarnoff, was employing a Russian immigrant, Vladimir Zworykin, who had come up with similar concepts as Phil; and the patent office was experiencing difficulty as to who had the first idea. Dr. Zworykin, some 17 years older than Phil, had developed some ideas in 1923. The patent office held hearings in Washington, DC, and in Salt Lake City, Utah. During the Salt Lake City phase, the patent attorneys located Farnsworth's former teacher, Justin Tolman, who, in 1934, was teaching at Roosevelt Jr. High School right in Salt Lake City. Mr. Tolman was able to produce the pages from Phil's old notebook, from 12 years before, in which Phil had sketched the diagrams and information relating to the concepts of televised pictures, and which he had dated in 1922. This came somewhat as a shock to RCA, but the dates clearly showed that Farnsworth had the ideas first, and was therefore granted the patents and the designation as the inventor of the first concepts of television.

Despite several more interference hearings in the patent office jurisdiction, Phil's patents were upheld. Subsequently, RCA was obliged to utilize Farnsworth's patents, under license, for the television work its engineers were producing.

By 1939, The Farnsworth Company had bought out the Capehart Phonograph and Radio Corporation in Ft. Wayne, Indiana, and Phil moved his headquarters to the laboratory in Ft. Wayne. They bought a local radio station, to be turned into a commercial television station once the Federal Communications Commission authorized television transmission. However, World War Two interfered, commercial television in the nation took a back seat, and the Farnsworth Television and Radio Corporation was involved with the war effort in developing a number of electronic projects, among which were sniperscopes by which infantrymen could shoot accurately at night, and infrared snooperscopes which could detect movement at night. These Farnsworth inventions greatly aided the improvement of the Allied war machinery.

Phil had developed memory tubes for radar screens and air traffic control. And he was still working to refine his television tubes to decrease the annoying flickering movements on the screen. Farnsworth's original patents, principles and devices are still used in today's television cameras, transmitters and receiving sets, and if they were taken out of a TV set, all that would be left would be a radio.

He developed cold cathode-ray tubes used in the television and computer industries, and began to work in cold nuclear fusion. The first baby incubator for premature infants was designed and built in his laboratory.

He initiated development of the first gastroscope used to study problems in the human digestive tract, and was instrumental in developing and refining the sonar devices used in detection of underwater ships and other objects.

By the early 1950's, the important initial research and improvements had been accomplished, television was a thing of reality, and Phil's mind was expanding in other directions. He was developing the principles and mathematics of how to contain hydrogen-helium fusion reactions. He continued to work on this idea, eventually developing what he considered were his most important patent cases, Methods and apparatus for producing nuclear fusion reactions.

He was also developing the concepts of holography when he died, ideas which have since been put into reality, as witnessed by movies such as "Star Wars," which utilized them.

Many great ideas and inventions were still in the mind of Phil when he died on March 11, 1971, in Holladay, Utah, a suburb of Salt Lake City.

This modest, unpretentious man from Utah has had a greater effect on his state, his nation, and the world community than all but a few other people. Utah is proud to present the statue of Philo T. Farnsworth, an extraordinary, intuitive and intense inventor; a scientist capable of looking far into the future; a tremendous example of an expansive human mind; and the Father of Television.

Thank you.

Governor BANGERTER. That's a great history; thank you very much.

We are pleased to have with us our entire congressional delegation, and I saw here earlier Senator Frank Moss, former Senator from the State of Utah. Frank, stand up. It's nice to have you with us.

There may be others, but I would like to recognize our good friend of north of Utah, Senator Jim McClure. It's nice to have you with us, Senator. Thank you for being here.

We are pleased to have, as I said, our congressional delegation. We are going to hear from these gentlemen in the following order: Senator Garn, Senator Hatch, Congressman Hansen, Congressman Nielson and Congressman Owens.

SENATOR JAKE GARN

Senator GARN. Mr. Speaker, Governor Bangerter, distinguished guests, ladies and gentlemen, I am very pleased to be with you on this great occasion today. I must admit, and I hope you don't misunderstand until I explain what I'm going to say and why I'm going to say it, that I had absolutely nothing whatsoever to do with Philo's statue being placed here today. I had nothing to do with the school children, or the Utah State Legislature, or other members of the Commission.

The reason I want to make that disclaimer is that I have a very definitive conflict of interest. Philo Farnsworth was my uncle by marriage, and, because of that relationship, and so not to be accused of a conflict of interest, I stayed totally and completely clear of the decision to place this statue here. But I am honored, honored with that relationship and that Philo is being honored here today. I first started hearing about Philo Farnsworth when I was a young boy. There is a very complicated relationship here.

Dr. Reese Anderson, who is a medical doctor in Salt Lake City, is my cousin, and Dr. Anderson, when I was a young boy, married Lois Gardner, who happens to be Pem's sister. Therefore, my cousin was a brother-in-law of Philo Farnsworth. But there's another part of this story as well. When I was a student at Roosevelt Junior High School, Justin Tolman was my algebra teacher, having been Philo's teacher in Rigby, Idaho.

I will never forget the first day of my algebra class at Roosevelt Junior High School. Justin Tolman stood up, and the very first thing he did was hold up an old, dog-eared copy of the *Reader's Digest*, and in the *Reader's Digest* was a story of the court suit, which said that Philo Farnsworth had finally been proven as the inventor of TV because of Justin Tolman's testimony. He carried that dog-eared copy of the *Reader's Digest*, and I suppose he read it to every class that he had for years before and years afterward.

I walked up after that first class, and I said, "Mr. Tolman, I would like you to know that, while I have never met Philo Farnsworth, he is my cousin's brother-in-law," and he was very nice to me. I got A's all year long in algebra.

Well, the rest of the story goes that my cousin and his wife, Pem's sister, called up one summer back in 1955 and said, "Jake, our niece is in town, and would you go out with her?," and I said, "No, I never go out on blind dates. I hate blind dates."

So, I told my mother what had happened, and she said, "Jake, I very rarely ever tell you that you have to do something, but Reese and Lois are your cousins, and it's no big deal. You can go out with their niece one night, and it won't spoil your life. You can handle it."

And she said, "This is not a request. It's an order."

And so I went out with their niece and ended up marrying her.

So, Philo, who had been my cousin's brother-in-law, became my uncle, and so I had the opportunity of calling Justin Tolman back, who was still alive at the time, and saying, "Justin, my relationship is now improved, and I thought you would like to know that your A's were well spent. I am now Philo's nephew."

So, I am not only honored on behalf of the State of Utah, that Philo would be so honored, but personally I am very happy and very proud to have been Philo's nephew, even by marriage, and to have had the opportunity in the years after he and Pem moved back to Salt Lake City to visit with him many times. There is no doubt in my mind that, had he lived, we would have seen many more inventions.

He used to talk about fusion and many other ideas that he had, and I believe he would have found solutions to those problems, had he lived longer.

I also can remember once when Bill Lear, who, as you all know, is a great inventor in his own right, of the Lear jet and many other things, came to Salt Lake City, when I was mayor. I went out with Philo to meet Bill Lear, and Bill found out I was a pilot. He said, "Jake, you will not be interested in all of the discussions that Philo and I will have."

I said, "Well, it isn't that I won't be interested. I simply would probably not understand what you two are talking about."

He said, "But why don't you go fly my Lear jet while we talk?"

And so I did get to fly Bill Lear's personal Lear, but I got back in time to hear part of the conversation. Bill Lear said, "Philo, I'm working on a steam engine," and he said, "I can't find any recording devices for temperature that are accurate enough to do my research work." He said, "Could you help me? I need something that will measure in thousandths of degrees.

I remember Philo looked at him, and he said, "Oh, that's no problem. Can you give me ten days or two weeks to work it out for you?"

Bill said, "Sure. That will be fine."

It's been a long association since I was fourteen years old in Justin Tolman's class, and I take great pride, not only as a Senator from the State of Utah, but as Philo's nephew and a member of the family, in thanking all of those who made this day possible in honoring a great scientist and great inventor from the State of Utah.

Thank you very much.

SENATOR ORRIN HATCH

Senator HATCH. Mr. Speaker, Governor Bangerter, distinguished guests, friends of Utah, welcome to the Capitol of the United States.

This is a hallowed place. Some of the greatest leaders of the world have lain in state right in the center of this room. It is a very fitting place to unveil the statue.

I never knew why Jake Garn had such a scientific mind before. He is not only related to the great Philo T. Farnsworth, but, had taken classes from one of his algebra teachers.

It's a privilege to be here with you. I want you all to know that this is a great honor for the State of Utah and for all of us here today.

This is a place that is worthy of the memory of great people, and I'd like to think that one reason that Philo Farnsworth was the success that he was, was because of his parents, who were wonderful people, and because of his great wife who is with us here today, Pem Farnsworth.

I think sometimes we don't realize how important the people are, the great human beings they are. Philo T. Farnsworth had more than 165 patents to his credit. That is a tradition that is continuing in Utah to this very day. We probably find more patents for persons than any other State in the Union. And it's people like Philo T. Farnsworth who paved the way and laid the groundwork to do it.

I have the feeling that if Philo T. Farnsworth was alive today, he would be one of the principal advocates for cold fusion, which would be very nice; wouldn't it?

But let me just end with these thoughts. This day is important. Utah will have two

statues in the United States Capitol for the first time. This day is important because of you, because of those who made this possible, and I want to particularly thank the Governor and Mrs. Bangerter for the efforts that they put forth, as well as all of those who have worked so hard to do this.

I want to thank all of you for being here. I think it makes this day a very memorable one and one that is meaningful to all of us.

Thank you so much.

REPRESENTATIVE JAMES V. HANSEN

Representative HANSEN. Mr. Speaker, Governor Bangerter.

I don't know about you, but every time I stand in this hall I'm a little awe-struck. I think of the words "We the people," and I realize that this Nation is predicated on people, and we talk about people in these halls.

It wasn't too long ago that some tired tourists were coming up the Mall. They wanted to cut through this building to get to the other side. They stopped by the guard over there, and they said, "Is it O.K. with you if we cut across the Rotunda?"

He said, "Why not? You own it."

It seems to me basically what this is all about. We're a people organization.

On July 2nd of 1864, Congress passed a law, and they passed this law because they had completed the two wings of the Capitol. They didn't need the original locations for the House and the Senate to meet, and they decided that they would allow each State to place two statues in the empty House chamber. They called the chamber "Statuary Hall"; it is located down south of here. Forty years ago we contributed our first statue: Brigham Young, the Lion of the Lord, the founder of the West, the man who led the western movement.

It's fun to stand over there and watch people look at Brother Brigham, as we affectionately refer to him—Boy Scouts, church leaders, all kinds of people. They stop, and they have their picture taken with Brother Brigham.

And now today we are adding another statue, Philo T. Farnsworth. Now Utah will have two statues, like other States have.

Years ago, there was a representative by the name of Alexander H. Stevens. On February 15, 1881, on the presentation of Vermont's

statue to National Statuary Hall, Mr. Stevens offered these words:

> These ceremonies and the National Statuary Hall will teach the youth of the land in succeeding generations, as they come and go, that the chief end of human effort to some luminary view could be usefulness to mankind and that all true fame, which should be perpetuated by public pictures, statues and monuments, is to be acquired only by noble deeds, and high achievement and the establishment of a character founded upon the principles for truth, of righteousness and inflexible integrity.

I'm sure he would happy with what we are doing today. We may ask ourselves what gives us the right, and others, to put another statue here in these hallowed halls. Why not? We own it.

REPRESENTATIVE HOWARD C. NIELSON

Mr. NIELSON. Mr. Speaker, Governor, fellow Senators and Representatives from the State of Utah, also I am honored to be with Senator McClure and Senator Symms of Idaho, who represent the state that was part of Mr. Farnsworth's life during his formative years in Rigby, Idaho, and I think that should be acknowledged.

Also Mrs. Lantos who I see over here is a good friend of ours.

It is an honor to be here. It is a great occasion.

I enjoy Statuary Hall. Too bad it is too small to accommodate all the statues, so they are scattered all over the building. They put Will Rogers where he could keep an eye on the people, as he wanted to do.

King Kamehameha is kind of hidden so people don't see it on the main floor. It should be where people can see it.

It has been mentioned already, you have had an adequate history about Mr. Farnsworth's life, about the 160-odd patents he had. There is an image dissector, of course, which led to TV and he got the patents for that. There are also infrared lights, very important, very important in World War II for surveillance. The isolettes, the baby incubator which has been so important to take care of premature babies, the Gastroscope, which is the precursor of gastroscopy, to examine the stomach for cancer and for other very important medical purposes I could mention.

I would like to thank Bruce Barnson who originally got this idea together with his students, whose program was just presented to us today.

I appreciate Representative Don LeBaron for accepting the challenge from the Ridgecrest Elementary School and for introducing a bill in the House, and for Senator Richard Tempest who put it through the Utah Senate. I think they have all done a good job.

I have known about Philo T. Farnsworth since my youth. Although Senator Garn and I were born in the same home town, he departed at the age of 5 while I stayed through high school. I think I had a better algebra teacher than Jake did, although I have to say he was a better football coach than algebra teacher. We lost all 12 games.

In spite of that, we learned about Mr. Farnsworth, Philo T. Farnsworth, at a very early age. It is exciting. It is exciting to be here and especially to meet his wife, his widow, and to meet all the other people who had so much to do with this. It is a pleasure to be here. I thank all of you for coming, and I also congratulate Mr. Avati, the sculptor, for his very fine work. We are going to see that in just a moment.

Thank you very much.

REPRESENTATIVE WAYNE OWENS

Mr. OWENS. Mr. Speaker, Governor and Mrs. Bangerter, Bishop Weigand, Mrs. Farnsworth and my colleagues, I am delighted to be with you today. This sacred Hall of the Capitol is full of America's most famous, none I suppose will have had stronger and longer lasting influence than the man whose statue we are about to uncover today. Electronic television has made of the world a global village, as Marshall McLuhan has said, and that has been nowhere more obvious than it has over this last year as we have seen the remaking of the entire communist world, Eastern Europe and the Soviet Union, really because of the influence of television as people in those isolated villages and cities over the years came to understand that the rest of the world was free and this was in great part due to the electronic influence of the television, whose father we are here to honor today.

So today, Philo Farnsworth joins Jake Garn, Howard and Jim and me and becomes a silent brooding presence on the Utah Congressional delegation, along with Brother Brigham. I suspect that he will outlast us all. He has had great influence, and it is an honor to be here today to honor him and this possible.

Mrs. Farnsworth, we are very proud of you and your husband and his great inventions. I suspect that for many, many years his influence will last, and we are grateful for his presence here. It becomes a stabilizing and reminding influence of Utah and the West and the genius of some of its young.

Thank you very much.

Governor BANGERTER. Thank you very much, Senators and Congressman. We appreciate very much your support and cooperation that we get on all these things that are important to Utah.

I did neglect to introduce Congressman Stallings from Idaho. It is a pleasure to have you with us. Let us give Congressman Stallings a hand. Please stand, Congressman.

Just a little aside, you know Northern Idaho, some of those people think they live in Utah and Governor Andrus tells me that when they go to Southeastern Idaho, they are surprised that he is the Governor, because they get more Utah television, and I like having Utah television go up there because I have some viewers who can't vote against me, and that is often an advantage. We are delighted to have our friends with us from Idaho.

It is time, it is the time we have all been waiting for, because the Speaker has been more than generous with his time and has to go to work. We are going to hear from Mrs. Farnsworth and James Avati, the sculptor, after we make the presentation after the Speaker has received it.

So if Pem and Mr. Avati will come up, we will officially unveil the statue and present it to the United States and to this Hall and to the Speaker of the House of Representatives. Will you join us.

[Thereupon, at 12:05 pm., the statue of Philo T. Farnsworth was unveiled.]

Sculptor James Avati, Pem Farnsworth, Speaker Foley, and Governor Bangerter unveil the statue of Philo T. Farnsworth in the U.S. Capitol Rotunda.

Governor BANGERTER. It is now my great pleasure to introduce to you and to present to you the Speaker of the United States House of Representatives, the Honorable Thomas S. Foley.

SPEAKER OF THE HOUSE OF REPRESENTATIVES THOMAS S. FOLEY

Speaker FOLEY. President Hinckley, Mrs. Farnsworth, Governor and Mrs. Bangerter, Senator Garn, Senator Hatch, my colleagues from the House of Representatives, Representative Hansen, Representative Nielson and Representative Owens, distinguished guests, Senator McClure, Senator Moss, and ladies and gentlemen, I am honored to be part of this ceremony.

Philo T. Farnsworth is one of the greatest inventors and scientists of the modern era, in this or any country. Although as you know, he had patents for over a hundred inventions, he was best remembered as the father of television, an idea that came to him when he was 13 years old plowing a beet field in 1920. The lines in the dirt made him think about parallel lines of electrons arrayed on a tube, which is the basic principle that brings us the television sets in our homes.

Few inventions in history have had a greater impact on the development of the world in which they were invented. Taken as a whole, it has been one of the great seminal inventions of our history, and it has shown the power both to instruct and inform, to transmit and to shape the course of events. In recent years it took us to the moon to watch the first moon walk. In recent months, it took us to the capitals of Prague, Berlin, Moscow and Beijing, both showing and assisting those great struggles for human liberty.

We have always been a Nation of discoverers and achievers. As we move into a new era in world history, it is likely that our economic power and our technological power will become more important to our status in the world than our military strength. We will depend, accordingly, on the capacity of our Nation to raise up the Philo Farnsworths of the future.

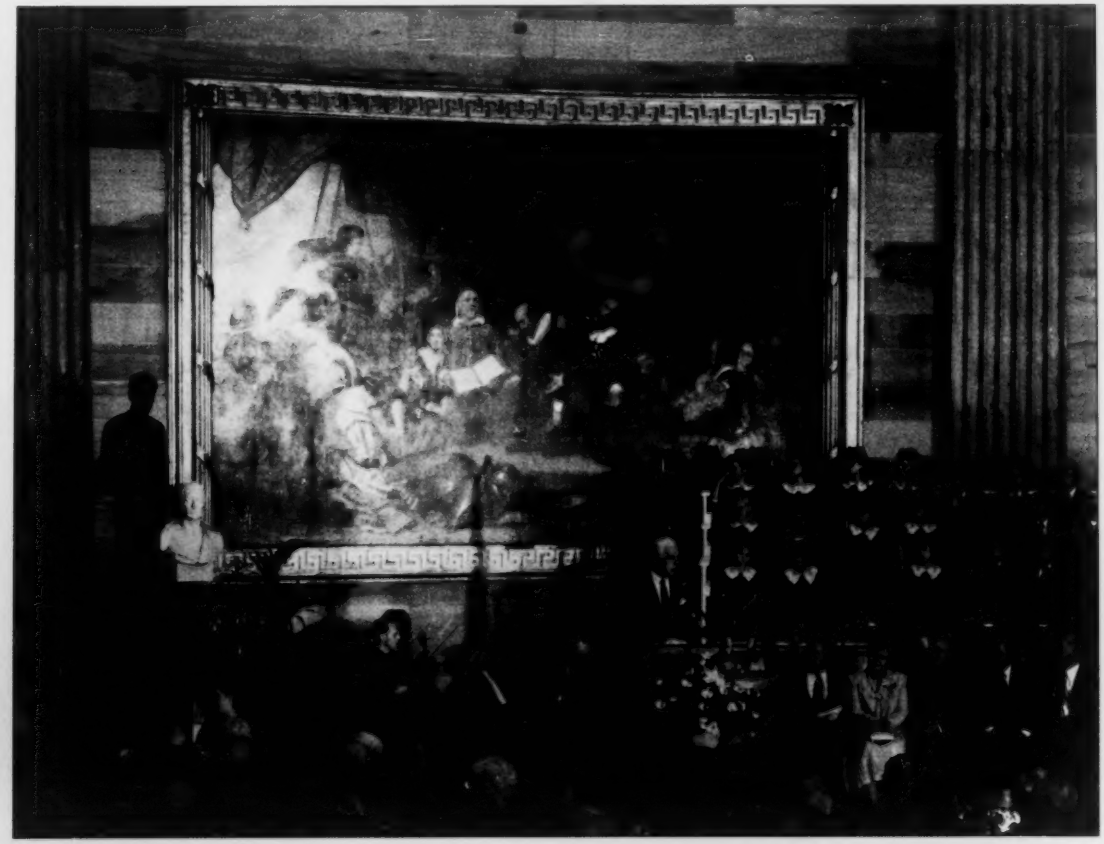
But American greatness does not depend

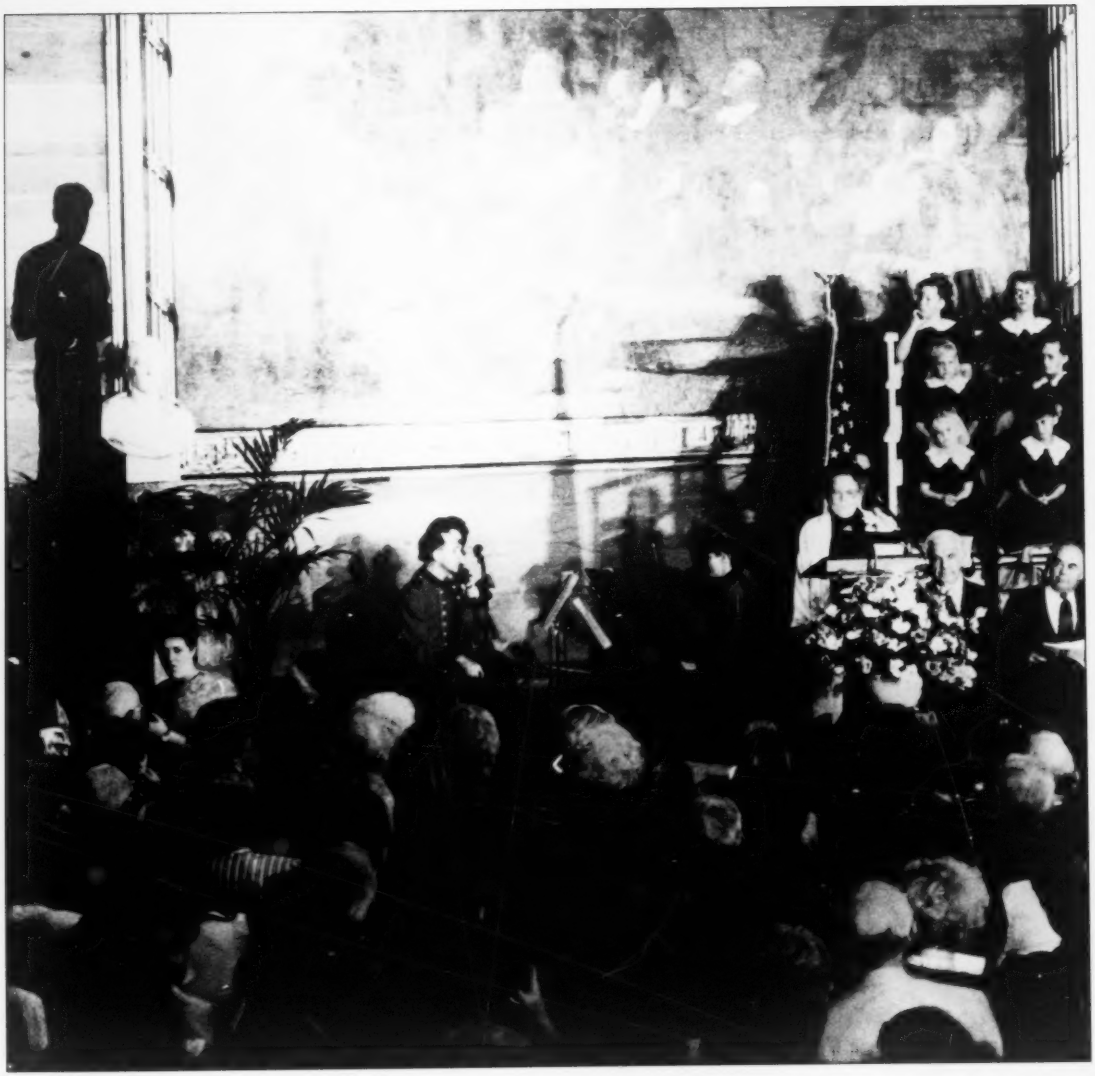
principally on our military or economic or even technological strength. It derives from those values, traditions and institutions which we find as the central expression of American democracy, and Philo T. Farnsworth's life reflects those values.

We are grateful for his gifts and we are honored to offer him this distinguished place in our Nation's Capitol where visitors from this country and all over the world can pay tribute to his contributions. Accordingly, as Speaker of the House of Representatives and on behalf of the House of Representatives, I am pleased and honored to accept this gift from Utah, the statue of Philo T. Farnsworth of Utah for placement in Statuary Hall.

Governor BANGERTER. Thank you very much, Mr. Speaker. The Speaker will maybe have to leave before we are finished, so we will excuse him whenever he needs to be about the business of the House.

We are pleased now to hear from the wife of Philo, Pem Farnsworth, and she will be followed by our sculptor, James Avati.





Mrs. Philo T. (Pem) Farnsworth in the Capitol rotunda at the statue unveiling ceremony on May 2, 1990.

MRS. PHILO T. FARNSWORTH

Mrs. FARNSWORTH. Mr. Speaker, Senators and Members of Congress, distinguished guests and all the dear friends who have come long distances to be here, I want to thank all of you from the bottom of my heart in the name of my husband and my family and in behalf of my family and my husband's family, there are many of them here, and I want to thank everybody of the State of Utah for giving us this great honor and for all of you friends who supported this project.

I was handed something just as I came out of the hotel today. It was the first volume of our collector's edition in which I have written about my husband. I am very pleased to have it here. It is called Distant Vision.

I would like to have my family stand. Could I have my family stand?

I would like to have my husband's family stand.

I need to especially thank Mrs. Bangerter and the Statuary Committee that began their employment for all the effort and the time they have put in on this project, and it has been a lot of long hard hours, I know that.

I want to say to the children on the stand, I really enjoyed your singing. If Phil were here, he would say, "Follow your dreams, because nothing is impossible. It just has to take the required amount of energy. Scotty hand to you, all of you. All of the young people in the Nation I think need to know that the sky is the limit and their dreams are not too big. They just need to have the conviction to follow them through as Phil did.

I have tried to tell his story in this book and I hope that the young people will gain something from that.

Thank you very much.

MR. JAMES AVATI
SCULPTOR

Mr. AVATI. My comments are mostly an expression of my gratitude for those members of the committee who made this all possible. This project from the very beginning has been handled in a professional way and with consideration to those needs which required sensitive care.

My special thanks to the committee chairman Bruce Barnson, who was my personal contact throughout the process. Also special thanks to the artists on the committee Gary Smith and Grant Speed, who patiently helped me through artistic insecurities. Thanks to all the committee members especially Claudia Ward and Ray Adair who made sure I was paid on time and to Scott Matheson, who got the fund raising off the ground.

I want also to thank Mrs. Bangerter and Governor Bangerter who have hosted these affairs. I think it important that we recognize that Bruce Barnson was the one who really made this happen and he's an amazing person.

I want to thank the Farnsworths for their support. Mrs. Farnsworth did her best to help me by providing photos and insights into Philo's appearance and personality. The life these people lived was truly remarkable and is I think worth the time spent to investigate. I'd recommend her forthcoming biography. The time spent at her home talking with her and with Kent left me with many deep feelings and respect for them and for Philo.

Thanks to Kendall Farnsworth, the young man who posed for me while I worked out the figure and drapery. We spent many hours together, he sometimes more patiently than me and always dependably.

Thanks to Neil Hallock for his work, which exceeds just casting. Neil is a remarkable person who has created a facility for bronze casting and other sculptural services that rivals the best. He has faced numerous bankers and other opposing forces and adversities with courage and idealistic devotion. The completion of the pedestal and all the pieces

presented to the committee members were in part designed by Neil. He really deserves more credit than I can give him.

Special thanks to my wife and children for their love and prayers as well to my parents and other family members who have supported me in my life and career.

I was privileged to represent an individual who was fully deserving of our respect and admiration. My only disadvantages were due to time, which is never sufficient, and to Philo's not being here to pose for the statue. This factor led to a depiction which is more symbolic than real, but which was the best I could do.

Thanks also to Phil's son Russell, who visited me in Utah with his companion Rose Kaplan, where we spent several pleasant days making a study of Russell, who resembles his father.

Thank you all.

Governor BANGERTER. We will now hear from a String Ensemble from the United States Marine Corps Band. They will play "Utah We Love Thee."

[Music by String Ensemble from U.S. Marine Band at 12:18 p.m.]

It has been a privilege to be here, and these are hallowed halls. I do not know how the rest of you feel, but I never go into our Capitol in Utah or this one that I don't feel that special spirit and meaning that comes from a government of the people. We are privileged to have the opportunity to serve with all of you participating in this great democracy that we call America. We love this country. We love the State of Utah and we love each of you and thank you for your great contribution.

I would like to particularly thank this String Ensemble, these great students from Ridgecrest Elementary School and their Conductor, Judi Christopherson, and their accompanist, Nancy Boyer. They do us proud. We appreciate the work you spent with these great children.

We thank our congressional delegation, Mrs. Farnsworth, Mr. Avati, Bruce Barnson, Dr. Carr, all who participated, we are truly grateful for their participation.

Now, following the Dedicatory Prayer, there will be a reception in the Russell Building. You go out the East door now, will someone show me which way is East in this place right here. You just go across the street to the third floor of the Russell Building. For those who need to use the elevator, they can go downstairs to the Delaware Door, or they can take a subway in the basement to the Russell Building, where they may join us again on the third floor for a reception.

Again, thanks to all of you and to Bishop Weigand for that Invocation. We are just pleased to have my good friend and a friend of our family for years, Elder James E. Faust of the Council of the 12 who will pronounce the Dedication and Benediction.

ELDER JAMES E. FAUST

Elder FAUST. Oh God, Our Eternal Father, the Father of Abraham, Isaac and Jacob, we come before thee to dedicate this monument which is a likeness of Philo Taylor Farnsworth. We do so to remind the people of this nation and the world of the diligence of this man who came from a small town in Utah of obscure, but noble pioneer heritage.

From his brilliant and inquisitive mind came many inventions which have blessed the people of this earth and will continue to bless mankind forever.

Not the least of these is electronic television, conceived while yet a teenager as he was plowing furrows in straight lines in his father's field with a disc harrow. He knew he could transmit straight lines from one image dissector to be reproduced in another.

That was the beginning of this marvelous means of communication which is now used for a myriad of purposes including to educate, entertain, explore the Universe and the human body. We pray Father, that this transcended technology may yet be used for even nobler and wiser purposes.

We're grateful that Phil lived to see the heavens explored and man walk on the moon because of the inspiration of his mind. Though lacking formal education, the genius of his intellect permitted him to discuss the infinite with the great scientific minds of this age as equals.

His work in genetics, cold nuclear fusion, and other fields may yet aid in blessing mankind in a transcending way.

We are grateful that his beloved Pem is here to see his memory enshrined in these hallowed halls. She above all others encouraged him when he was unsure, nursed him when he was ill, loved him when he was in despair, and bore to him their children.

Father, we invoke Thy blessing upon her, and their children, and their children's children.

Now Father, we dedicate this statue of Philo Taylor Farnsworth in remembrance of his life and accomplishments to stand here in our nation's capitol among other statues of noble and great men and women of this the greatest commonwealth ever formed on this earth.

We pray that this statue may be preserved without harm to remind future generations that the children of Utah thought that the accomplishments of Phil Farnsworth were so great as to merit being enshrined in the heart of this nation. We are grateful for all he was and all he did, and for those who made so a great a likeness. He looked on himself, not as a originator, rather as conduit.

I now dedicate this monument in the authority I possess and in the name of the Lord Jesus Christ. Amen.

[Thereupon, at 12:25 pm., the Farnsworth Statue Dedication was concluded.]

In San Francisco, in 1929, Philo Farnsworth adjust the controls of the first Farnsworth Company-manufactured television set.

Philo T. Farnsworth, Inventor of Television

By Leonard J. Arrington, Lemuel H. Redd, Professor of Western History Emeritus,
Brigham Young University, Provo, Utah

Philo Taylor Farnsworth, Utah's second nominee for recognition in Statuary Hall in the Capitol Building and an inventive genius who had an enormous impact on the world and its culture, was born in a log cabin at Indian Creek (now Manderfield), near Beaver, Utah, on August 19, 1906. He was the oldest of five children born to Lewis Edwin and Serena Amanda Bastian Farnsworth.

Philo T. Farnsworth was born in this log house in Indian Creek, Utah on August 19, 1906.

The Farnsworths were a prominent pioneer Utah family. Philo's grandfather, Philo T. Farnsworth, Sr., was a native of Ohio, converted to the Church of Jesus Christ of Latter-day Saints (Mormon) as a teenager, moved to Illinois, and, in 1848, at the age of twenty-two, migrated to the Salt Lake Valley in Utah. A farmer and freighter, he lived in Salt Lake City, Pleasant Grove, Filimore, and in 1856 moved to Beaver, Utah, where he served as Mormon bishop, County Probate Judge, Indian interpreter, and member of the territorial legislature. Lewis Edwin, his son and the inventor's father, married Serena Amanda Bastian, whose Danish parents migrated to Utah by handcart in 1857, and who had grown up in the town of Washington in southern Utah. Lewis and Serena met at Brigham Young Academy, where they were both students.

Lewis was a restless person, always searching for better land to farm. In 1910, when Philo was four, the family moved to Parowan, Utah. The next year they moved to Buckhorn Springs, near Paragonah, Utah. In 1914, when Philo was eight years old, they moved to Mountain Home, Duchesne County, Utah, and after two years, moved on to Altonah, also in Duchesne County. Later the same year, they moved to Fillmore, Utah, and the next year to Washington, just north of St. George, Utah. Always a precocious youngster, Philo was introduced to the violin at age nine years when the family was living in Washington, and he performed before church and neighborhood groups. He did so well that the family began to hope that he would grow up to be a concert violinist, though his experimenting with the handcranked telephone and gramophone was what made him decide to be an inventor. In 1918, the family then moved, with some of Lewis's brothers, to the upper Snake River country in Idaho, and settled in Ucon, about ten miles northeast of Idaho Falls.

Influenced, perhaps, by their months at Brigham Young Academy (now Brigham Young University) Lewis and Serena were

eager to see that their children, who obviously had to change schools quite often, were provided with reading material. The one or two technical magazines they took stimulated the imagination of young Philo. In fact, when Philo was only six years of age, he declared that he would one day be an inventor, an assertion that the family did not laugh at.

Philo T. Farnsworth at age 14 in Rigby, Idaho.

In the spring of 1919, the family moved to the Bungalow Ranch near Rigby, Idaho. Here Philo finished grade school, milked the cows, cared for the stock, spent days in the field, did the evening chores and mowed the hay. In the magazine *Science and Invention*, one from the stack of magazines he found in the attic of their new home, he noted that a prize would be given for the best original invention. He invented a thief-proof ignition switch for automobiles, and won first prize, $25.00. With that money, he bought his first long-trousered suit.

By 1920, they were in Bybee, a beautiful tract of fertile land near the Snake River, just west of Rigby, north of Garfield and east of Lewisville. The ranch they moved onto had an electrical generator Delco lighting system used both for light and power. Young Philo was very much interested in it. He read up on electricity in his magazines, and tinkered with the generator, his mother's sewing machine. Among other things, he wound an armature, built an electric motor and attached it to his mother's washing machine and sewing machine. Seeing his talent, the local Mormon bishop placed him in charge of wiring the local meetinghouse.

By now, Philo was fourteen years old and entered Rigby High School. There he was fortunate to have an exciting high school chemistry teacher, Justin Tolman. Although a freshman, Philo asked to sit in on the senior chemistry class, and after much persuasion, teacher Tolman permitted him to do so. Philo asked many questions, was introduced to books, magazines and encyclopedias in Mr. Tolman's private library, and spent many hours after school talking with the teacher. Philo and Mr. Tolman became friendly, and Philo confided to him that he planned to become an inventor and, indeed, had already invented several things. Because of his close companionship with the teachers, Philo was often put in charge of the study hall. One day, Mr. Tolman stepped in unexpectedly and found Philo

giving the students an exposition of the Einstein theory of relativity. The teacher remained quiet and listened as Philo unfolded the mystery of the theory with both clarity and dramatic force. The scientific concepts glowed with Philo's youthful enthusiasm. Tolman later told friends it was the best discussion of the theory of relativity he had ever heard or read. Clearly, Philo had an amazing grasp of scientific subjects; he devoured electrical encyclopedias like other students wolfed down popcorn.

From his reading, Philo learned about electrons—their properties, their behavior, and how, by harnessing them, men were sending and receiving audible messages and music through the air. He became fascinated, and returned again and again to two contrivances: the photo-electric cell, by which light energy was converted into electrical current; and the cathode-ray tube, by which a beam of invisible electrons was converted into a glowing light. At the time, these tubes were quite crude pieces of apparatus. All of this, it must be emphasized, was in 1922 when radio was in its infancy; there were only 30 licensed broadcasting stations in the United States, none in Idaho and only one in Utah.

Philo kept his younger brothers and sisters entertained with his vivid descriptions of things he had learned. More importantly, his active mind reflected on a way of combining the photo-electric cell and the cathode-ray tube so that one could translate light into electrical energy, then proceed to change the electrical current back into a glowing fluorescence. As George Everson's book on Philo and *The Story of Television* explains so well, Philo was impressed that the photo-electric cell and the cathode-ray tube were two instruments made-to-order for the transmission of pictures over great distances, whether by wire or through the air.

Although the idea of television goes back many years, Philo's idea of harnessing the photo-electric cell and the cathode-ray tube in a simple television system was new and original. He thought it through day after day, making careful diagrams, planning how he would handle the variations of light and shade in a picture, translate them into their electrical counterparts, send the varying current through the air, and restore it in proper sequence at the receiving end in glowing light. His conception of the sending tube resulted in the dissector tube, a simple but revolutionary device, daring and bold, all worked out in his mind by this 15-year old farm boy, when he was a freshman attending Rigby High School.

After school had let out on the afternoon of Tuesday, February 21, 1922, teacher Justin Tolman came into a classroom to find Philo covering the blackboard with strange drawings. "What is that?" he asked Philo.

"It's an electrical system for projecting an image," responded Philo.

"But what does it have to do with our chemistry assignment?"

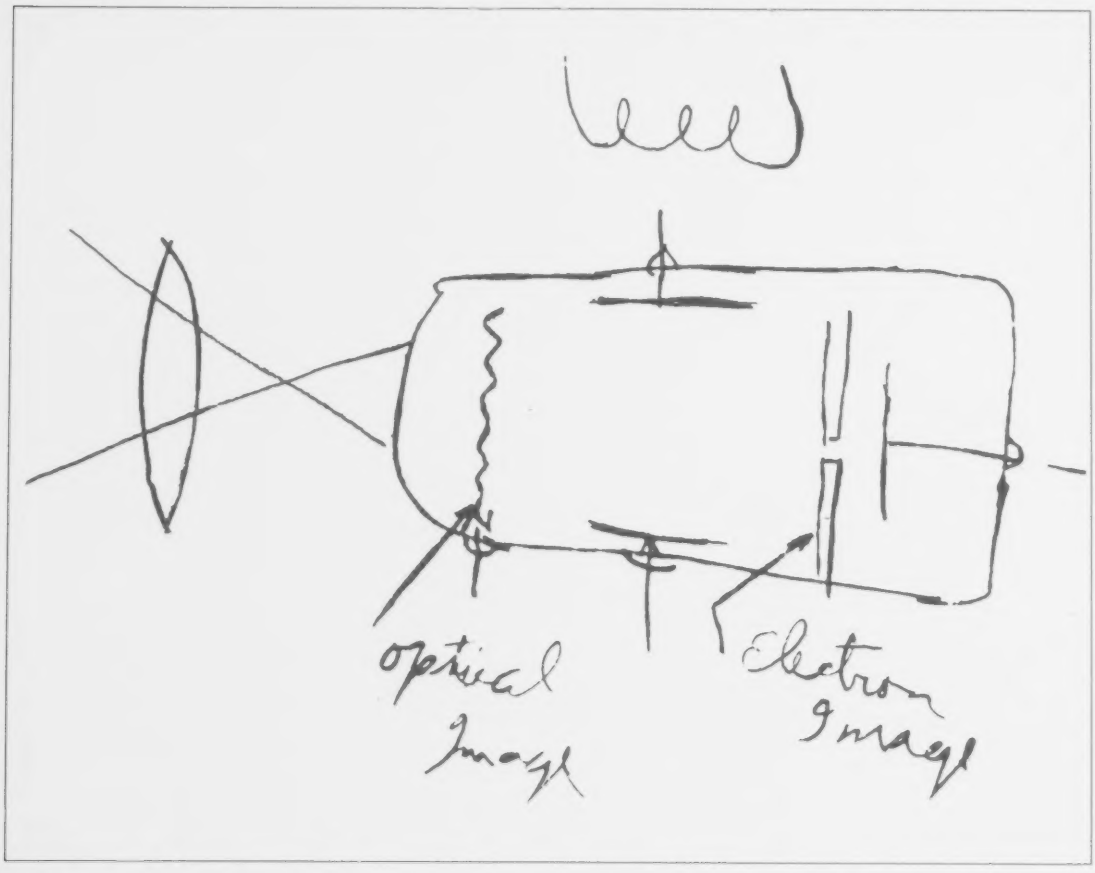
"Oh, nothing," Philo grinned. "It's my new invention." Philo then went through the whole diagram, explaining this circuit and that circuit, and how, by means of a dissector tube, one could translate light impulses into electrical impulses and scan an image by means of fast-flying electrons in order to display pictures electrically.

Philo T. Farnsworth's seventh grade class, Rigby, Idaho. Philo is on the extreme right of the back row. This was about the time he was getting his first ideas about electronic television. Teacher Frances Critchlow is the fifth from the left on the back row.

With an infectious enthusiasm, the boy gave a clear, concise explanation of how his system would work to bring pictures of living scenes into the living rooms of America. All the details of the system could not be covered that afternoon before supper, so Philo and Mr. Tolman spent several other evenings at the high school blackboard talking about Philo's system and how it would work, how the various problems could be solved, how the tendency of the electronic image to blur could be prevented by providing a magnetic lens or solenoid to control the electrons and keep the image sharply focused. He explained how a tube could be built of the right shape, closed at the end by flat lens surface, and how the scanning would be accomplished by devising an anode metal cylinder about the size of a lead pencil that would project up in the tube and act as a collector of electrons. The electrons would flow into the pinpoint aperture and be carried out as electrical current. This

would constitute the picture signal. The flow of the picture elements into the aperture would be controlled by means of magnetic scanning coils which, by attraction and repulsion, would oscillate the electron image back and forth in an orderly fashion over the anode slot.

Clearly, the conception that came to this 15-year old was complex and original. The picture would be translated from light values into a ribbon of electrical variations which then could be handled as any other electrical current. Eagerly, Philo asked Mr. Tolman if it



The original drawing Philo sketched in his notebook in 1922, which he gave to teacher Justin Tolman. This drawing was used during the hearings in 1934 in proving that Philo had developed the first ideas for electronic transmission of images.

all sounded reasonable. Tolman concluded that it did. The essential elements of the system were conveyed to Tolman with such precision and clarity that twelve years later, without any coaching, Mr. Tolman was able to sketch it out in accurate detail to a group of referees in the U.S. Patent Office.

While Philo was consumed with the invention, and wanted to devote his time to it, he knew very well that there was more to life than his fresh and imaginative creation. He was a genius he knew how to concentrate his mind on a project and pursue it to its fruition but he was also a young man. He played the violin in the high school orchestra, learned to play the piano by the hunt-and-peck method, and participated in school and church social activities.

During Philo's one year in high school, he completed two years' work plus Senior Chemistry. He was in a big hurry; he had to earn money to enter the Brigham Young University in Provo. One of his half-brothers was working in the Oregon Short Line (Union Pacific) Railroad shop in Glenn's Ferry, Idaho, so Philo packed up his books and went there and took a job as an electrician's assistant. He also took correspondence courses from the National Radio Institute in Washington, D.C., and also correspondence courses in advanced algebra, geometry, business English, and English literature from the University of Utah in Salt Lake City.

Meanwhile, Philo's parents, impressed that they must do something to give their children a suitable education, decided to give up on the ranch and move to Provo, Utah. An added inducement was that this would permit them to look after Philo's half brother, Ronald, whose wife had just died, and his two children.

Philo followed the family to Provo, and was admitted to Brigham Young High School for the 1923-24 school year. He completed his high school work the winter of 1923. A terrible tragedy overtook the Farnsworth family in January 1924 when Philo's father, Lewis, died of pneumonia. So, in the summer of 1924, after he had graduated from high school, he was unable to find employment, and he and one of his friends, attracted by a recruiting campaign put on by the Navy in Provo, signed up as apprentice seamen with the hope of preparing themselves to go to the Naval Academy at Annapolis, Maryland.

Philo was sent to boot camp in San Diego, California, where he found it necessary to adopt the name Phil, to avoid being called Fido. He used the name of Phil the rest of his life. Phil found Navy life exciting for awhile, but soon saw his life bogging down with monotony and routine. The chaplain could see that Phil was brilliant, (Phil passed his Navy Academy tests second highest in the nation) but was not making progress toward his goals, and took steps to have him released so he could return to the university. Serena needed the help of her oldest son, and through the efforts of the naval chaplain and a family friend, Phil was given a release from the Navy.

Upon his return to Provo, Phil and his mother and the family, who all had found employment, worked out plans to provide for the family of five, yet allow Phil to attend Brigham Young University. He was assisted in the latter by university president Franklin Harris, who arranged for a student loan. Phil got part-time work to help support the family and he was also admitted into the Arts and Sciences program at BYU. He made the most of his opportunities at the University. He discussed his scientific interests with faculty

members, especially Carl F. Eyring, Dean of the College of Arts and Sciences, who had just received his Ph.D. under Dr. Robert A. Millikan, world famous physicist at Berkeley, California. Dean Eyring was sympathetic and helpful. He permitted Phil to take the mathematics and electronics courses that would be most useful to him in perfecting his invention, and Phil justified this confidence by doing well in them. The college also gave Phil the run of its laboratories and facilities. Phil was also introduced to the Bell Laboratories journals which contained articles on electronics, including some by the former BYU professor Harvey Fletcher, who was making his own mark in the field of electrical engineering.

As in Rigby High School, Phil also played the violin in the school orchestra, and was first violinist with the chamber music orchestra. Here he met Elma "Pem" Gardner, an attractive girl a year or two younger than he, from Jensen, Utah, near Vernal. Phil and Pem enjoyed music, dancing, hiking, and various Latter-day Saint Church socials.

When school was out in June 1925, Phil worked with his brother in a lumbering company in Payson Canyon, Utah. Returning to school in the fall, he was unable to find enough part-time work for him to continue and so, in early 1926, he went to Salt Lake City, hoping to obtain work installing and servicing radio sets. Radio was still in its infancy, and Phil thought a radio service shop might grow with the industry. He was joined by Elma's brother, Cliff Gardner. Although they provided good service, they led a hand-to-mouth existence. After a few weeks, both of them registered with the employment agency at he University of Utah.

Just at that time, George Everson and Leslie Gorrell came to Salt Lake City to organize the Salt Lake Community Chest. In order to make their business survey, they offered employment to several students who had signed up at the University of Utah. Phil and Cliff were among those engaged. Phil, who was 19 years old, was placed in charge of the crew of six students and, needing clerical assistance, he recommended Pem, and she was given that job.

One evening when working late, they concluded with a bull session of sorts. Everson and Gorrell asked Phil if he planned to go on to school. He told them he couldn't afford it, and that he was trying to find a way to finance his invention. "An invention?" they asked.

"Yes, it's a television system, a way of sending pictures through the air the same as we do sound." Phil gave a little explanation, but the men were not particularly impressed. However, the more they thought about it, the more they thought his idea might have merit. They invited him out to dinner the next evening to tell them more. Although slightly-built Phil looked a little undernourished, Everson and Gorrell were stirred. Here is what George Everson wrote about it:

> As the discussion started, Farnsworth's personality seemed to change. His eyes, always pleasant, began burning with eagerness and conviction; his speech, which usually was halting, became fluent to the point of eloquence as he described with the fire of earnestness this scheme that had occupied his mind for the last four years. He became a super salesman, inspiring his listeners with an ever-increasing interest in what he was saying. Once he had outlined his general scheme, we considered the practical aspects of the situation. I thought that if Farnsworth, with little more than a high school education and a background of

pioneer communities, had conceived this idea of electronic television, surely the great laboratories such as General Electric and Bell unquestionably must have hit upon the same scheme and were probably developing it in secret, and had it well along to completion.

When Everson expressed aloud the supposition that General Electric and Bell Laboratories had developed such a system and had it nearly ready for introduction, Phil launched into an exposition of what was going on in the world of experimental television work. He described the experimenters, where they were located, and what they had accomplished and failed to accomplish. He knew all this because he had followed the literature. "They are all barking up the wrong tree," Phil said. "These men are trying to transmit pictures by mechanical means. This will not work. The speeds required for scanning an image to produce a good picture are so great that there must be no moving parts." Phil then explained that his system was entirely electrical. "The necessary speeds will be achieved by manipulating the velocity of light and of electrons . . . my completely electrical system will be accomplished by manipulating electrons within vacuum tubes," he stated.

It was clear that Phil's mind was filled with the electronic art. He marshalled an astonishing array of authorities to defend his approach, and expressed a wish that there were a foundation where individual inventors like himself could get backing for worthwhile creations.

"What do you think it would cost to build up a first model of your scheme?" Everson asked.

"I don't know. Maybe $5000 would be enough." Phil replied.

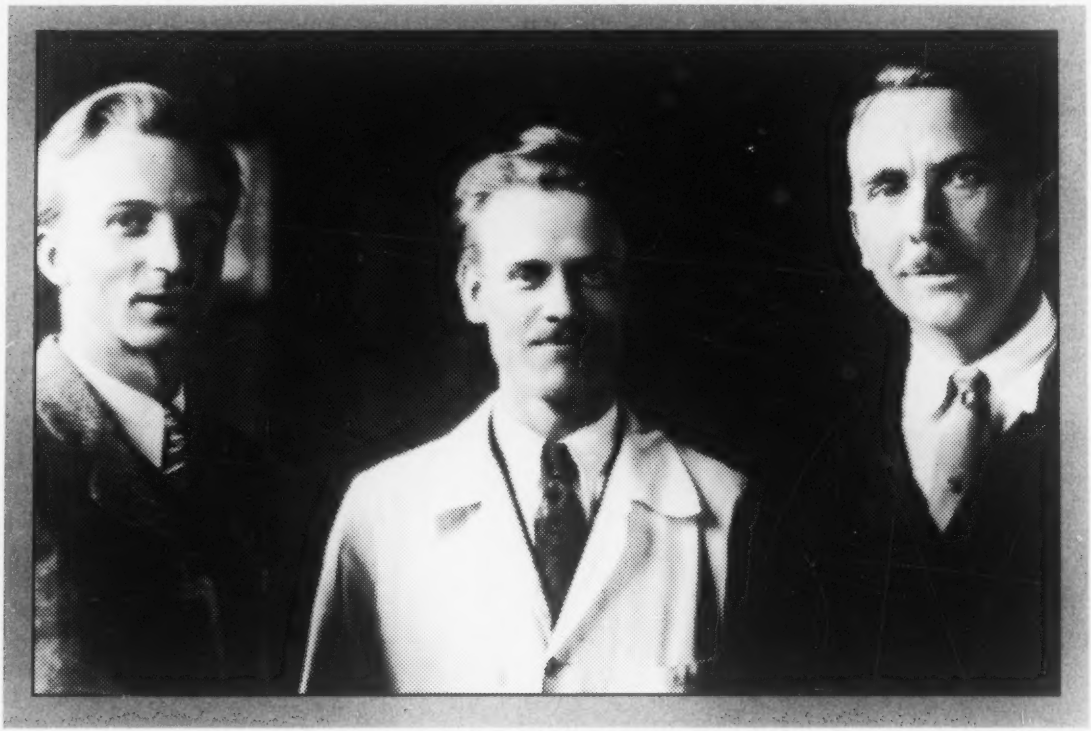
Everson and Gorrell finally agreed to put up $6000 to initiate a partnership in which Phil was half-owner and Everson and Gorrell owned the other half. The $6000 would be used to support Phil for a year, and pay for the expenses of equipment he might need. They agreed that he should set up a laboratory in southern California so he could be near Cal Tech.

Before leaving Salt Lake City, however, Phil insisted on marrying Pem and taking her with him. They married and left for Los Angeles, California, on May 27, 1926. Phil and Pem established themselves in a four-room furnished apartment at 1339 N. New Hampshire Street in Hollywood, and set up a research lab in the dining room and installed a motor generator in the garage.

They employed a glass blower to make the revolutionary electronic transmitter tube, they secured copper wire for the focusing and deflecting coils; and they obtained radio tubes, resistors and transformers. The curtains in the dining and living rooms were drawn so Phil could work under controlled light. This was during the days of Prohibition, and the neighbors reported to the police their suspicions that the Farnsworths were operating a still, so the police raided the apartment. They found no liquor, of course, but they were curious about the equipment. "We're working on a television system." Phil told the mystified policeman. "Well, I'll be darned." he mumbled.

By fall, it was obvious that Phil and Pem along with Everson and Gorrell were not going to accomplish much more than to prove out some of the principles Phil had conceived. Everson and Gorrell asked Phil and Pem to

make a complete literary description of their system, with schematic drawings to accompany it, and they took it to the best patent lawyer in Los Angeles. Next, they took Phil to the senior professor of electronics at Cal Tech. The professor was overwhelmed with Phil's knowledge and with his analytical mind. After a four-hour session, Everson and Gorrell asked the professor whether Phil's idea was scientifically sound. It was. Was it original? Almost certainly. Was it feasible? "It would be difficult but not necessarily insuperable," the professor surmised.



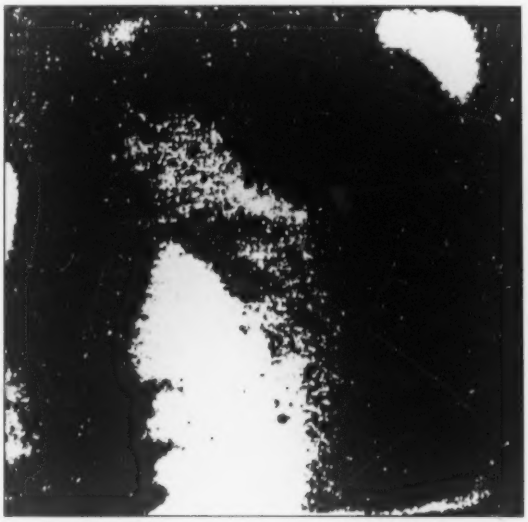
The original partners in the Farnsworth Television Co. Leslie Gorrell, left; Philo T. Farnsworth, center; George Everson, right. The photo was taken in 1928.

With that encouragement, the group gave time to the discussion of ways and means of obtaining additional financing. Phil thought $12,000 would be sufficient to produce a satisfactory television picture. Once again, he was too optimistic. In fact, in the end, it took $1 million and thirteen years before television was ready for commercialization. And, as for Radio Corporation of America, they spent $60 million and had a workable system, but in the early 1930's secretly used Farnsworth's camera tube. Everson and Gorrell canvassed

their friends, and finally found an interested person in Jesse B. McCargar of Crocker First National Bank. After some investigation, McCargar and friends in San Francisco let Phil and his partners have $25,000. The financial group would get 60 percent in the new syndicate. The remaining 40 percent was to be divided between Farnsworth, Everson and Gorrell. Phil would get $1000 per month for the laboratory, out of which he could keep $200 as salary. As the bankers were ready to draw up the necessary papers, it dawned on them that Phil was only 20 years old and couldn't legally sign a contract. Since his mother lived in Utah, they had to prepare papers that would make Everson Phil's guardian in California until he was 21. They arranged for a second-story loft over a garage at the eastern foot of Telegraph Hill, on Green Street in San Francisco. Phil and Pem started work once more, in October 1926. (Incidentally, the City of San Francisco has designated that laboratory as an historic site, and has installed a plaque mentioning the importance of the building.) The first dissector tube was completed, the magnetic and scanning coils were adapted to it, and the necessary electrical equipment to generate the wave pulses for scanning the image was built. When a receiver set had been built and a usable receiver tube installed, the first transmitting and receiving apparatus in this first edition of the Farnsworth television system was connected up in the fall of 1927. The first electronic image was transmitted to a screen in an adjoining room, on Wednesday, September 7, 1927.

It was a momentous year— the year Charles Lindberg flew the Atlantic Ocean, the year Jack Dempsey had his big fight with Gene Tunney, the year Phil Farnsworth turned 21. Phil knew it was a history-making event—he and Pem could hardly contain themselves.

In May 1928, in order to define images more clearly, Phil painted a black triangle on a clear piece of glass. They adjusted things for a couple of hours, and those in the receiving room, including Everson, Cliff Gardner (Pem's brother who had trained himself to do their glass-blowing) and Phil, turned things on. A fuzzy, blurry, but wholly recognizable image of the black triangle filled the center of the picture field.



The first two-dimensional image transmitted by television, in 1927. The subject is Philo's wife and assistant, Pem.

They gazed spellbound for a few minutes and then silently shook hands. After the excitement and some adjustments to make the image clearer, Everson said he would like them to paint a dollar sign on a piece of glass and use it on the next try. The image was now less fuzzy and more clearly defined. Everson dropped by the bank the next morning and told McCargar and his friends about the dollar sign he had seen in the tube. They were as delighted as Columbus was when he saw the New World.

Philo Farnsworth with an early television system in the Farnsworth home

There was further painstaking work, and Phil and his associates were finally ready in the late summer of 1928 to present a formal showing to the bankers. By that time, the syndicate had spent $60,000. Much more needed to be done before commercialization, however, and on March 17, 1929, Phil and his partners incorporated as Television Laboratories, Inc., under the laws of California. There were subsequent showings at the Franklin Institute in Philadelphia, Pennsylvania, and elsewhere, including England and Germany.

In the meantime, a Russian immigrant, Vladimir Zworykin, was also developing a television system while at Westinghouse and the Radio Corporation of America (RCA).

Philo Farnsworth demonstrating his [illegible] at the Franklin Institute in Philadelphia, Pennsylvania, 1934

He also applied for patents, one as early as 1923, a year after Farnsworth's youthful blackboard demonstration. Neither Phil nor Zworykin knew of the other's existence. Seventeen years older than the skinny, blue-eyed Phil, Zworykin had developed the iconoscope, which is the electrical eye of the television camera, and the kinescope, the receiving part of the set. RCA was now getting close to a commercial product, and the patent office, having applications from Zworykin and Farnsworth, had to decide who had really

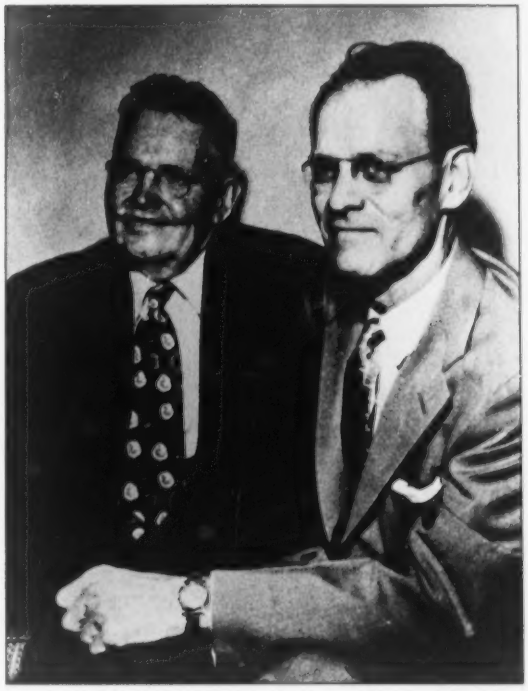
developed the first workable system. Who owned the basic patent for the electronic system that constituted television?

Hearings were held in Washington, D.C., and Salt Lake City, Utah, in 1934. When Phil told his lawyer about his experience twelve years earlier in Rigby High School, the lawyer immediately tried to locate his teacher, Justin Tolman. He found Tolman teaching school at Roosevelt High School in Salt Lake City. The lawyer made arrangements for Tolman to meet them for a deposition in Salt Lake City. When Justin walked into the hearing, the patent office attorneys asked him if he could remember Phil's sketching out his system on the blackboard in February 1922. "Yes, I can," he said.

"Can you remember the essence of the system?"

Justin then went to the blackboard in the hearing room and, from the notebook that Phil had made for the chemistry class in which he had sketched out his system and which was dated February 21, 1922, drew the system Phil had described twelve years earlier. On this evidence, it was clear to everyone that Phil was the first to conceive of the essential elements of television. The ruling resulting from this hearing, dated August 26, 1934, affirmed that Farnsworth had the prior claim to the idea of electronic television, and upheld his original patents which had been granted in 1930.

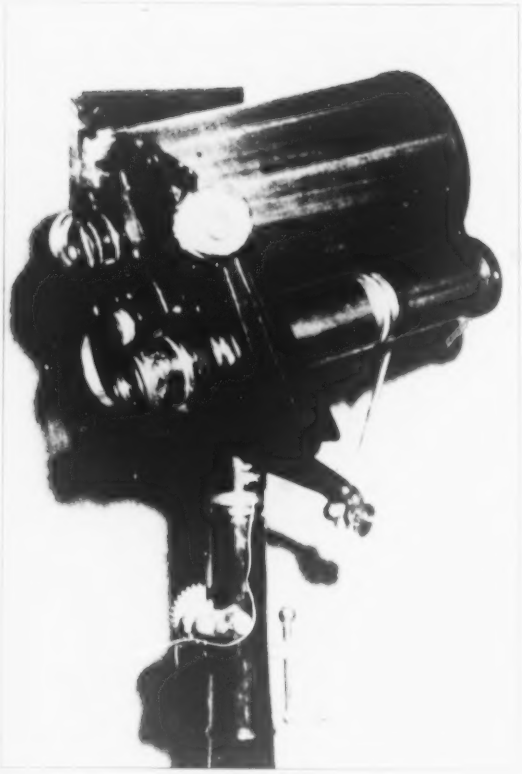
RCA later worked out a cross-licensing arrangement, and the subsequent development of the invention can be attributed to both Phil and Zworykin, who, it must be acknowledged, was also a brilliant inventor. Farnsworth Radio and Television Corporation, which was then established, existed under various names for many years.



Rigby High School teacher, Justin Tolman, left, was the first person Philo described his ideas to about the possibilities of television. This photo was taken in June 1953 during the Utah Broadcasters' Society testimonial dinner for Mr. Farnsworth.

The Farnsworths had four sons, one of whom died in infancy. They lived where Phil's work took him—to Fryeburg, Maine, Philadelphia, Fort Wayne, Indiana, and elsewhere. In addition to the dissector tube, the indispensable element in the development of television, Phil worked on radar, the electron microscope, the development of infrared lights, the incubator for premature infants, the gastroscope to examine the human digestive tract; and in the last years of his life, he was deeply engrossed in atomic fusion and had made important advances in that direction. His patent on an ion transport pump was good news to many nuclear physicists.

Philo Farnsworth examines the image dissector, the tube that converted light to electrical impulses and, ultimately, brought us television. The photo is from 1934, around the time he made the invention. Farnsworth died in 1971, just short of his 65th birthday.



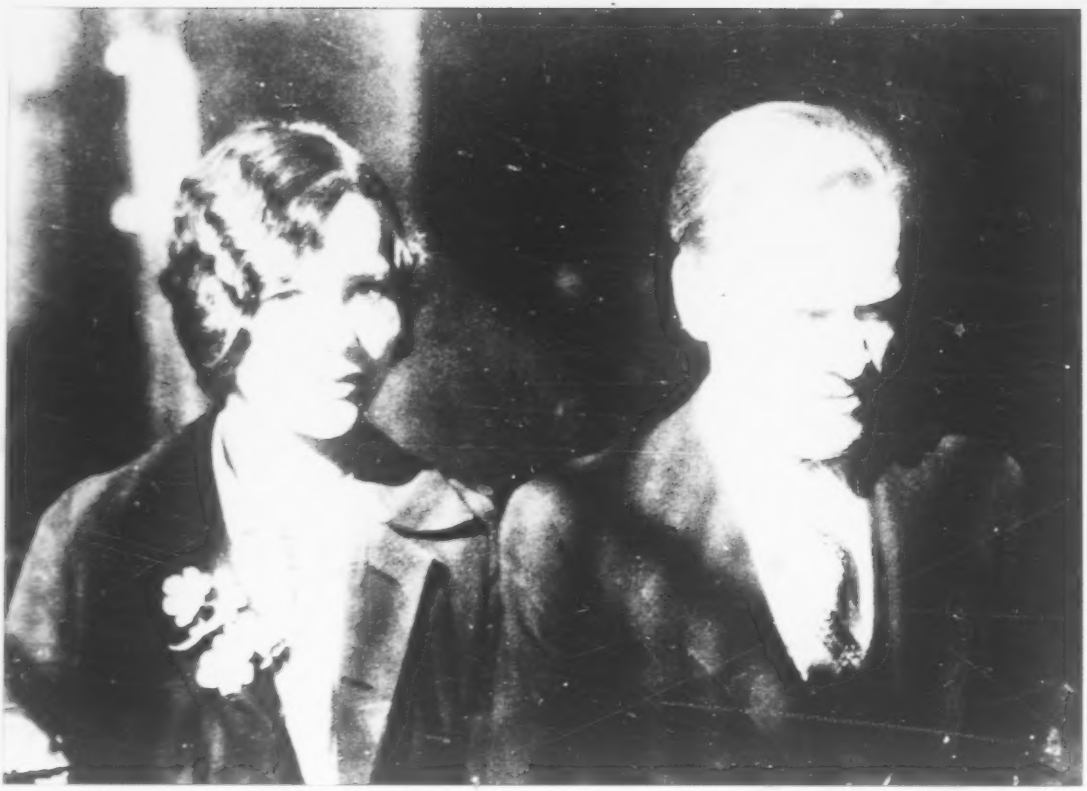
Having learned to play the violin as a very young child, Philo found relaxation in picking up the instrument during stressful times. He also discovered that many important breakthroughs occurred when he was playing. This photo was taken in Philadelphia, 1934.

All told, Phil held 150 U.S. patents and more than 100 foreign patents on various inventions.

Illustrating the many inventions developed by Phil and his lab, or inspired by him, Pem tells a story of being in the office of Nobel prizewinner Dr. Ernest Lawrence, in the Lawrence Radiation Laboratory in Berkeley, California. Dr. Lawrence drew on a blackboard to explain an improved color television camera tube. He suddenly turned to Pem and declared, "Are you aware that it was Phil's demonstration of his electron multiplier tubes on Green Street in San Francisco that inspired me in my work on the cyclotron?"

The Farnsworths lived the last years of Phil's life in Holladay, Utah, a suburb of Salt Lake City. Phil died there on March 11, 1971, at the age of 64. Those who knew him said that he was a busy, but a kind and loving husband and father. Arch Madsen, Director of Bonneville International, knew him well, and said he was a genius, all right, but also one of the sweetest persons he ever knew.

It is important to recognize that the contributions of Pem Farnsworth have not been insignificant. She was Phil's assistant and devoted companion during all their 45 years of married life. She took care of his correspondence, became an expert draftswoman and did much of his drawing and helped in his early planning, and she relieved Phil of many small matters in order to free him up to work on his research.



Brigham Young

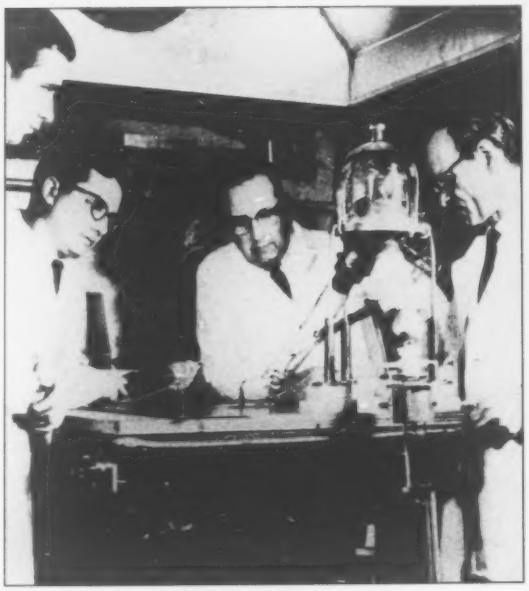
Utah State

place a statue of Phil

nary Hall of the National Capitol in Washington, D.C. This action recalls American democracy which permitted an obscure farm boy with a brilliant, inventive mind and persevering character to make one of the great discoveries in world history. Phil's creative genius, nurtured far from the nation's leading scientific centers, and therefore not bound by the conventional wisdom that said

it couldn't be done, was able to perceive electrical phenomena in a new way, a way that in afterthought seems nothing short of miraculous.

According to Pem, Phil was especially proud when he was able to see with the electronic eyes he had invented, the landings on the moon. Phil would also be proud to know that the experiments in cold nuclear fusion that he started at Brigham Young University, and which are presently also being developed and tested at the University of Utah, are now attracting international attention.



Philo Farnsworth was continually inventing and improving on his earlier discoveries up to the time he retired. This apparatus is the "Farnsworth Fusor," developed in 1966. Left to right Gene Meeks, assistant to Dr. Farnsworth; George Bain, chief project engineer; Rear Admiral Frederick P. Furth, ITT vice-president and liaison to the Fusor Project; Philo Farnsworth, president of Farnsworth Electronics.

Philo Farnsworth at his desk in his laboratory in Philadelphia in 1938.

About the Sculptor, James Richard Avati

James Avati was selected by the Philo T. Farnsworth Statuary Hall Commission from 35 Utah artists. He was one of five finalists asked to provide a clay model of Philo T. Farnsworth. In all, he will complete three statues: one greater-than-life-size (seven feet, six inches) and two one-eighth size.

James is the son of the illustrator James Santé Avati. The sculptor's grandmother, Elizabeth Lansdell Hammell, was a noted watercolorist whose flower paintings have appeared on magazines such as *The Reader's Digest* and *The Woman's Home Companion*. Her husband, Will Hammell, was an art director in New York, who traveled with the sculptor's grandfather, Onorato Avati, from their New Jersey homes to their New York City places of business each day on the commuter trains. Onorato was a photographic illustrator whose work appeared in the New York newspapers.

After enrolling in an illustration program at The Newark School of Fine and Industrial Art, James determined that illustration was not his direction, and withdrew in the second year of the program. While living with his grandmother, he began to make sculpture in her studio and to attend The Art Students' League of New York where he began to study life drawing and figure modeling (in water-based clay). This process has become the basis of his discipline. After his marriage to the painter Deborra Riddle in 1978, he moved with Deborra to Utah to continue his education at Brigham Young University and at the University of Utah where he is completing his masters degree, and is teaching figure classes in sculpture.

His work, which follows in the tradition of European and American realism, may be seen at the Phillips Gallery, Salt Lake City, Utah, and at the Coda Gallery in Palm Springs, California. He has completed several other life-sized works, notably the Mesa Historical Society Monument to Education, in Mesa, Arizona, the Fort Douglas Museum Association Monument to General Patrick E. Connor Salt Lake City, Utah. In addition to other commissioned projects, the artist continues to study the figure and to produce works independently which are shown in shows and galleries.

The Farnsworth Commission has been a significant experience for sculptor, who is an admirer of many of the sculptors whose works are in National Statuary Hall collection. The sculpture was produced at Artspace in Salt Lake City. The artist used Kendall Farnsworth, who is related to Philo's grandfather, as a model for the work. In addition, he made a study of the head of Philo's son, Russell Farnsworth, who strongly resembles his father.

Philo Farnsworth evaluates his improved image dissector tube in Philadelphia, 1935

APPENDIX I

U.S. PATENTS ISSUED TO PHILO T. FARNSWORTH

	Filing Date	Title	Patent No.	Issue Date
*	01/07/27	Television System	1,773,980	08/26/30
	01/07/27	Light Valve (split and refiled 11/7/27)	1,806,935	05/26/31
	01/07/27	Electric Oscillator System	1,758,359	05/13/30
*	01/07/27	Television Receiving System	1,773,981	08/26/30
	01/09/28	Photo-electric Apparatus	1,970,036	08/14/34
	01/09/28	Fundamental Dissector Case, Television Method	2,168,768	08/08/39
*	04/17/28	Electrical Discharge Apparatus	1,986,330	01/01/35
	04/25/28	Synchronizing System	1,844,949	02/16/32
	11/26/28	Method and Apparatus for Television	2,037,711	04/21/36
	03/11/29	Admittance Neutralization Amplifier	1,986,331	01/01/35
	03/03/30	Electron Multiplier	1,969,399	08/07/34
*	05/05/30	Television Scanning & Synchronizing System	2,246,625	06/24/41
*	05/05/30	Slope Wave Generator (Farnsworth & H. Lubcke)	2,059,219	01/03/36
	06/14/30	Electron Image Amplifier	2,085,742	07/06/37
	06/14/30	Thermionic Oscillograph	2,009,846	11/23/37
	07/07/30	Dissector Target	1,941,344	12/26/33
	08/26/30	Television System	1,773,980	10/26/30
	12/04/30	System of Pulse Transmission	2,026,379	12/31/35
	07/14/31	Projection Oscillight	2,140,284	12/13/38
	07/14/31	Scanning and Synchronizing System	2,051,372	08/18/36
	07/22/31	Thermionic Vacuum Tube	1,975,143	10/02/34
	04/14/32	Television Method	2,168,768	08/08/39
	05/31/32	Luminescent Screen (Farnsworth & B.C. Gardner)	2,098,000	11/02/37
	02/08/33	Luminescent Screen and Method of Use	2,104,253	01/04/38
*	04/03/33	Scanning Oscillator	2,059,683	11/03/36
	04/26/33	Image Dissector	2,087,683	07/20/37
	04/26/33	Image Dissector	Re 21,504	07/09/40
	10/07/33	Electron Multiplying Device	2,071,515	02/23/37
	07/05/34	Oscillation Generator	2,071,516	02/23/37
*	11/05/34	Scanning Means and Method	2,280,572	04/21/42
	11/05/34	Method of Manufacturing Cathode Ray Tube Targets	2,286,478	06/16/42
	11/06/34	Projection Means	2,134,145	01/10/39
	11/06/34	Projection Apparatus	2,091,705	08/31/37
	03/09/35	Incandescent Light Source	2,089,054	08/03/37
	03/12/35	Means of Electron Multiplication	2,143,262	01/10/39
	03/12/35	Cathode Ray Tube	2,149,045	02/28/39
	03/12/35	Oscillator (divided 4/26/37)	2,174,488	09/26/39
	05/07/35	Incandescent Light Source (with H. Bamford)	2,066,070	12/29/36
	05/07/35	Multipactor Phase Control	2,071,517	02/23/37

U.S. PATENTS ISSUED TO PHILO T. FARNSWORTH— Continued

Filing Date	Title	Patent No.	Issue Date
05/07/35	Means for Producing Incandescent Images (Farnsworth and H. Bamford)	2,155,478	04/25/39
04/26/37	Amplifier	2,221,473	11/12/40
07/06/35	Means and Method of Image Analysis	2,216,264	10/01/40
07/06/35	Charge Storage Dissector	2,140,695	12/20/38
07/06/35	Cathode Ray Amplifier	2,228,388	01/14/41
07/06/35	Charge Storage Amplifier	2,233,888	03/04/41
07/15/35	Image Receiving Tube	2,118,186	05/24/38
08/10/35	Cathode Ray Amplifying Tube	2,251,124	07/02/41
09/07/35	Charge Storage Dissector Tube	2,141,836	12/27/38
09/07/35	Image Analysis Tube	2,100,842	11/30/37
* 09/14/35	Charge Storage Tube	2,100,841	11/30/37
02/10/36	Scanning Current Generator	2,214,077	09/10/40
02/11/36	Multipactor	2,135,615	11/08/38
02/24/36	Radiation Frequency Converter	2,107,782	02/08/38
02/24/36	Multipactor Oscillator and Amplifier	2,091,439	08/31/37
03/09/36	Absorption Oscillator	2,159,521	05/23/39
03/24/36	Secondary Emission Electrode	2,139,813	12/13/38
05/16/36	Means and Method of Controlling Electron Multipliers	2,140,832	12/20/38
05/16/36	Means and Method of Producing Electron Multiplication	2,204,479	06/11/40
05/18/36	Electron Multiplier	Re 20,759	06/14/38
06/01/36	Cathode Ray Tube	2,158,279	05/16/39
06/01/36	Multi-stage Multipactor	2,141,837	12/27/38
06/18/36	Concentric Multiplier	2,147,934	02/21/39
07/11/36	Image Source	2,213,070	08/30/38
07/11/36	Means and Method for Synchronizing Pulses in Television	2,155,479	04/25/39
08/13/36	Means and Method of Operating Multipliers	2,128,580	08/30/38
08/18/36	Image Dissector	2,216,265	10/01/40
10/31/36	Repeater	2,143,146	01/10/39
11/02/36	High Power Projection Oscillograph (Farnsworth and Frank Somers)	2,109,289	02/22/38
11/02/36	Beam Scanning Dissector	2,124,057	07/19/38
11/02/36	Cathode Ray Tube	2,139,814	12/13/38
11/04/36	Cold Cathode Electron Discharge Tube	2,184,910	12/26/39
11/09/36	Electron Multiplier (Farnsworth and Frank Somers)	2,179,996	11/14/39
— — —	Multiplier Oscillator	2,137,528	11/22/38
03/22/37	Multiplier Coupling System	2,140,285	12/13/38
03/22/37	Split Cathode Multiplier	2,217,860	10/15/40
03/22/37	X-ray Projection Alternating Device	2,221,374	11/12/40

U.S. PATENTS ISSUED TO PHILO T. FARNSWORTH— Continued

Filing Date	Title	Patent No.	Issue Date
03/22/37	Self-energized Alternating Current Multiplier	2,174,487	09/26/39
03/22/37	Method of Operating Electron Multipliers	2,180,279	11/14/39
03/22/37	Diode Oscillator Tube Construction	2,189,358	02/06/40
03/22/37	Two-stage Oscillograph	2,216,266	10/01/40
03/22/37	Split Cathode Multiplier Tube	2,141,838	12/27/38
04/26/37	Detector	2,156,807	05/02/39
04/26/37	Amplifier	2,221,473	11/12/40
04/26/37	Two-stage Electron Multiplier	2,161,620	06/06/39
09/20/37	Means for Producing an Incandescent Image	2,179,086	11/07/39
01/05/38	Electronic Amplifier	2,239,149	04/22/41
02/21/38	Radio Frequency Multipactor Amplifier	2,172,152	09/05/39
03/12/38	Dissector Tube (Original date 12/31/35)	2,235,477	03/18/41
06/13/38	Image Projector (Original date 12/31/35)	2,235,477	03/18/41
06/13/38	Shielded Anode Electron Multiplier (Farnsworth and R. Snyder)	2,203,048	06/04/40
09/10/38	Image Analyzing System	2,254,140	08/26/41
12/31/38	Dissector Tube	2,153,918	04/11/39
04/05/39	Image Amplifier	2,257,942	10/07/41
04/05/39	Cold Cathode Electron Discharge Tube	2,263,032	11/18/41
04/05/39	Image Amplifier	2,291,577	07/28/42
04/24/39	High Efficiency Amplifier	2,223,001	11/26/40
04/25/39	Electron Multiplier	2,260,613	11/28/41
07/05/39	Electron Image Amplifier	Re 22,009	01/20/42
12/29/39	Image Dissector	Re 21,504	07/09/41
— — —	Electronic Amplifier	Re 21,818	06/03/41
02/15/40	Electric Recording and Reproducing System	2,304,633	12/08/42
02/23/40	Application and Method of Electron Discharge Control	2,274,194	02/24/42
03/05/40	Rectifier	2,287,607	06/23/42
03/11/40	Dissector Tube	2,264,630	12/02/41
04/03/40	Electron Control Device	2,286,076	06/09/42
07/25/40	Electron Control Device	2,311,981	02/23/43
09/07/40	Image Dissector	2,292,111	08/04/42
09/07/40	Television Projection System	2,315,113	03/30/43
10/09/40	Cathode Ray Signal Reproducing Tube	2,301,388	11/10/42
05/22/41	Deflecting System	2,297,949	10/06/42
07/05/41	Image Amplifier	2,291,577	07/28/42
06/20/42	Image Reproducing Device	2,355,212	08/08/44
07/29/50	Television Image Analyzing Tube	2,641,723	06/09/53
11/25/50	Cathode Ray Tube and System	2,754,449	07/10/56
05/07/52	Light Translating Device	2,992,346	07/11/61
03/03/54	Radio Translating Device	2,992,358	07/11/62

U.S. PATENTS ISSUED TO PHILO T. FARNSWORTH— Continued

Filing Date	Title	Patent No.	Issue Date
05/18/54	Color Television Apparatus	2,921,228	01/12/60
03/06/57	Cathode Ray Tube	2,941,100	06/14/60
01/11/62	Electric Discharge Device for Producing Interaction between Nuclei	3,258,402	06/28/66
03/07/62	Electron Gun in the Form of a Multipactor	3,201,100	08/17/65
03/29/62	Ion Transport Vacuum Pump	3,181,028	04/27/65
04/19/63	Microwave Amplifier Utilizing Multipaction to Produce Periodically Bunched Electrons *	3,312,857	04/04/67
05/13/66	Method and Apparatus for Producing Nuclear Fusion Reactions	3,386,883	06/04/68
— — —	Electric Discharge Device (Canadian patent)	654,306	12/18/62
— — —	Radio Frequency Amplifier (Australian patent)	102,330	10/22/37

Note: The * denotes patents of unusual importance.

All the above patents were assigned to the Farnsworth Corporation; listed below are the only patents Farnsworth owned personally:

Filing Date	Title	Patent No.	Issue Date
06/09/64	Process and Apparatus for Drying and Treating Lumber (Vacuum process)	3,283,412	11/08/66
04/01/69	Lumber Drying (Vacuum method)	3,574,949	04/13/71

Patents pending when Farnsworth went into medical retirement:

Case No. 167 Power Convertor
Case No. 168 Multipactor Amplifier
Case No. 170 Multipactor Flood Gun for use with Iotron
Case No. 171 Tunable Infrared Source
Case No. 173 Pendulator
Case No. 175 Refluxor
Case No. 176 Ion Propulsion Motor
Case No. 177 Radio Frequency Power Generator

The following patents were listed in a Farnsworth Company brochure, apparently filed under the names of some of the Farnsworth Corporation engineers:

2,099,846 Magnetic Focusing (an improvement)
2,155,479 Carrier Wave Modulation
2,163,966 On the Applications of Electron Multipliers
2,200,166 Improved Electron Multiplier for use in Image Dissectors
2,233,878 On more Applications of Electron Multipliers

APPENDIX II

PHILO T. FARNSWORTH'S MOST BASIC PATENTS STILL USED IN MODERN TELEVISION RECEIVERS

Television Receiving System

The second patent filed by Farnsworth (January 7, 1927) covers the method turning the electrical impulses back into a picture at the receiver. *Patent No. 1,773,981.*

Scanning

All modern television receivers utilize Farnsworth's basic system of scanning relatively slowly in one direction and relatively rapidly in the opposite direction, substantially extinguishing the beam in the picture tube during the rapid "retrace" parts of the scan cycles. *Patent No. 2,246,625.*

Synchronizing

All modern television receivers embody Farnsworth *Patent No. 2,246,625* "Television Scanning and Synchronizing." This also covers radar scanning.

Magnetic Focusing

Substantially all modern television receivers utilize Farnsworth's invention covered by *Patent No. 2,099,846.*

Generation of the High Voltage from the Horizontal Scan Frequencies

Single tube scanning wave generator, used universally for both vertical and horizontal deflection. *Patent No. 2,059,683.*

Vertical Deflection Wave Generator

Almost all modern television receivers use this circuit. *Patent No. 2,059,219*

Maintaining Constant Black Level

Very widely used, *Patents No. 2,301,522* and *No. 2,246,625.*

Television System

The first patent filed on electronic television was *Patent No. 1,773,980,* filed January 7, 1927. *Patent Re 21,504* was a reissue of the basic patent to broaden the claims. This was one of the five cases that won interferences with RCA on their "Image Orthicon" tube. *Patent Nos. 2,254,140, 2,257,942* and *2,264,630* are three more cases of Farnsworth's covering the "Image Orthicon."

Magnetic Focusing

This theory and method of focusing is used in every cathode ray tube, both in transmitting and receiving. Dr. Ernest Lawrence (deceased), longtime friend of Dr. Farnsworth, gave this patent credit for leading the way for his famous cyclotron and bevrotron at the University of California, Berkeley. Farnsworth *Patent No. 1,986,330.*

Television Method

Filed January 9, 1928, this invention provides a method of dissecting an image for elec-

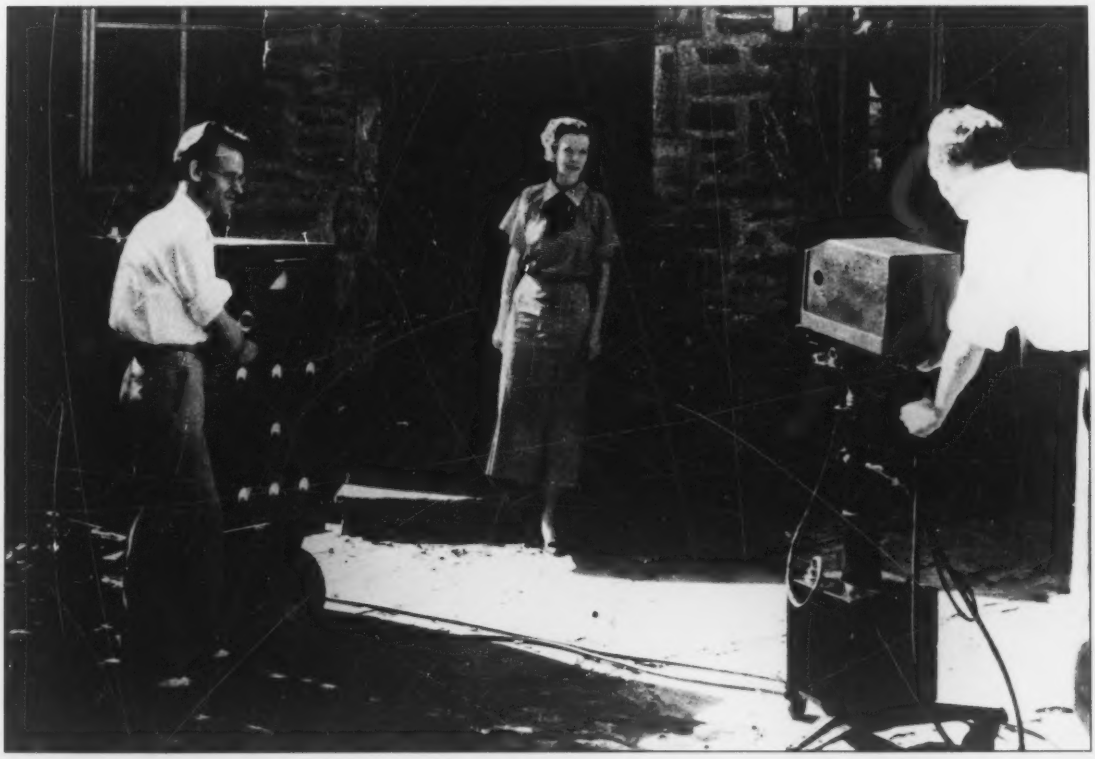
trical transmission. *Patent No. 2,168,768* (a continuation of *No. 1,970,036.*)

Philo T. Farnsworth originated the Electron Multiplier and had 32 patents covering this field. Since this was such a new art, many of his patents covered the means and method of operation of these tubes.

The Farnsworth Iatron series (electrostatic memory tubes) began with his *Patent No. 2,085,742*, filed June 14, 1930 and issued July 6, 1937. One version of this tube was developed for use in the large telescopes, extending their reach in space by some 50,000 times.

Another use was for the first PPI scan in airport control towers to enable them to keep airplanes in the vicinity in patterns in order to prevent collisions.

Another tube in this series was *Patent No. 2,118,186*, filed July 15, 1935 and issued May 24, 1938. This furthered the art of the Memory tube and from this the Farnsworth Company produced the snooperscopes that made it possible for Army trucks to move at night with infrared light, and the sniperscopes used on rifles so that they could be fired accurately at night as well as in the daytime.



One of the pictures captured on the Farnsworth Electronic Television. Pem Farnsworth is shown being filmed as Philo Farnsworth looks on.

APPENDIX III

OTHER INVENTIONS USED THROUGHOUT THE WORLD

Philo T. Farnsworth is mostly known for his work in electronic television. Even today, television transmitters and receivers use his six basic and controlling patents. What is not so well known, is that he made many contributions to society covering a broad range of subjects, namely:

1. The first crude electron microscope, developed to study the forming photo-sensitive surfaces, 1930.

2. The first gastroscope for seeing inside the digestive tract.

3. The first baby incubator, the "Isolette," was built in his Philadelphia laboratory.

4. It took his physician friends ten years to accept his theory that cancer was caused by cell mutation.

5. He had some 30 patents on the electron multiplier art. From these came the first PPI scan, which allowed airports to control air traffic. His tubes extended the reach of astronomy telescopes further into space than had previously been done.

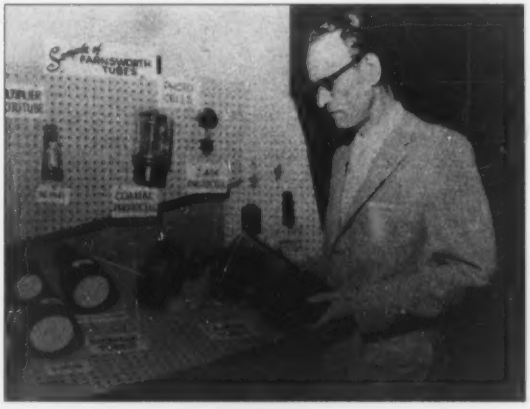
6. His infra-red work was responsible for the sniperscopes and snooperscopes (built by his company) which permitted our soldiers to move troops and reveal snipers at night in World War Two.

7. A miniature Farnsworth Image Dissector (television camera tube) was used in television transmissions from our astronauts on the moon flights.

8. He had an important part in pioneering space age science.

9. Farnsworth owned the patent of the Image Orthicon. RCA was obliged to take a license from Farnsworth to use it. This was the forerunner of the present television camera tubes.

10. He considered his most important work to be in the field of atomic fusion power. He was granted two patents covering this work, "Electric Discharge Device for Producing Interaction between Nuclei," *Patent No. 3,258,402*, and "Method and Apparatus for Producing Nucleic Fusion Reactions," *Patent No. 3,386,883*. He believed that these patents were of more value than all the others combined. Unfortunately, he did not live to complete this work.



Philo Farnsworth invented and improved dozens of special-purpose tubes for use in many scientific endeavors besides television. He speculated that controlled nuclear fusion would depend heavily on knowing how to develop and produce tubes.

APPENDIX IV

SCIENTIFIC SOCIETIES AND HONORS RECEIVED

Scientific Societies:

Fellow—

Institute of Radio Engineers (later I.E.E.E.) 1939 American Association for the Advancement of Science Society of Motion Picture and Television Engineers.

Member—

American Physical Society.
American Optical Society.
Franklin Institute.
Royal Society of Arts, London, England.

Honorary Engineering Fraternities—

Eta Kappa Nu, University of Pennsylvania Chapter.
Sigma Xi, Member at large.

Honors include:

Eta Kappa Nu Recognition—1937.
Morris Leibman Memorial Prize, IRE—1941.
First Gold Medal, National Television Broadcasters Association—1944.
Honorary Doctor of Science, Indiana Technical College—1951.
Citation From Brigham Young University—1953.
Citation from Utah Broadcasters Association—1953.
Honorary Member of Utah Cultural Society—1953.
Recognition, Fort Wayne, Indiana, Lions Club—1957.
Honorary Doctor of Science, Brigham Young University—1968.
Documentary of his life by KSL-TV, Salt Lake City, Utah —1968.
KSL's Broadcast Mountain name changed to "Farnsworth Peak"—1969.
Recognition, Salt Lake Inventors Council—1970.
Recognition, Intermountain Electrical Association—1971.

Posthumous Awards:

Golden Plate Award (Accepted by his wife, Pem) at the Mormon Tabernacle, Salt Lake City, by American Academy of Achievement—1974.
Commemoration of the 50th Anniversary of the first all electronic television transmission—1977.
Special "Emmy" Award, California Board of Governors—1978.
Philo T. Farnsworth TV Museum under construction at Rigby, Idaho, the birthplace of television—1979.
Being considered for commemorative postage stamp—1981.
Indiana Broadcasters Hall of Fame induction—1981.
California Monument placed marking his San Francisco laboratory on Green Street—1981.
California Inventors Hall of Fame induction—1981.
Beehive Hall of Fame (Utah) induction—1982.
Twenty-cent postage stamp issued bearing his likeness issued—1983.
National Inventors Hall of Fame induction—1984.
Voted the subject of second Utah statue for Statuary Hall in in U.S. Capitol Building, Washington, D.C.1987.
Philo T. Farnsworth Memorial Museum dedicated in Rigby, Idaho 1988.
Dedication of statue in National Statuary Hall, Washington, D.C.1990.

In 1950, Philo T. Farnsworth spoke to the Society of Electrical Engineers—San Francisco chapter—at the time of the dedication of the opening of the coaxial television cable between San Francisco and Los Angeles.

Philo Farnsworth with an early telefilm transmitter, designed to transmit movie film images by way of television; San Francisco in 1929.

APPENDIX V

CHRONOLOGY AND CAREER DATA OF PHILO T. FARNSWORTH

August 19, 1906.—Born in Indian Creek, Utah, to Lewis Edwin and Serena Bastian Farnsworth.

1910.—Moved to Parowan, Utah.

1911–14.—Lived in Buckhorn Springs, Utah.

1914–16.—Lived in Mountain Home, Utah.

1916.—Moved to Altonah, Utah, then to Fillmore, Utah.

1917.—Moved to Washington, Utah.

1918.—Moved to Ucon, Idaho.

1919–23.—Lived in Rigby, Idaho. At age 14, he wrote his ideas and sketched the schematic drawing on the principles of the electronic transmission of images.

1923–24.—Graduated from Brigham Young High School, Provo, Utah.

1924.—Entered U.S. Navy, then was released when his father died of pneumonia, and returned to Provo.

1925–26.—Attended Brigham Young University, Provo. Then worked for the Community Chest in Salt Lake City where he met George Everson and Leslie Gorrell.

1926–29.—Crocker Research Laboratory, Director of Research.

1929–31.—Television Ltd., San Francisco, California, Vice President and Member of the Board of Directors and Director of Research.

1931–33.—Fulfilled agreement for the above company to organize Philco's Television Laboratories in Philadelphia, Pennsylvania.

1933–38.—Headed Eastern Division of Farnsworth Television, Inc., Philadelphia.

1938–42.—Farnsworth Television and Radio Corporation, Fort Wayne, Indiana, Director, Vice-President and Director of Research and Engineering.

1942–48.—Leave of absence. Built private laboratory and organized Farnsworth Wood Products for the war effort, in Oxford County, Maine.

1948–49.—Resumed active work in Fort Wayne, as above.

1949–56.—Capehart-Farnsworth, Division of International Telephone and Telegraph, Vice-President and Director of Research Engineering.

1956–58.—ITT Farnsworth Electronics, Fort Wayne, Indiana, Vice-President and Director of Special Products Division.

1958–59.—International Telephone and Telegraph Laboratories, Fort Wayne, Technical Consultant.

1959–62.—ITT Farnsworth Research, Fort Wayne, Director of Research, Nuclear Division and Systems Consultant.

1962–68.—ITT Farnsworth Research (reorganized), Director, President and Director of Research.

1968–69.—Medical retirement.

1969–70.—Philo T. Farnsworth Associates, Salt Lake City, Utah, President and Director of Research

March 11, 1971.—Deceased, Holladay, Utah.

Philo T. Farnsworth holds a new version of his high-power mutipactor tube.

APPENDIX VI

PHILO T. FARNSWORTH PROJECT—THE BEGINNING

By Bruce R. Barnson, Former Principal of Ridgecrest Elementary School

The inception of the Philo T. Farnsworth statue project was an august and sometimes audacious attempt to right a longstanding wrong against one of Utah's most important citizens. Actually, the project started as an annual assignment to give students an experience with the legislative process, a yearly ritual at Ridgecrest Elementary School.

Each year Ridgecrest's school staff and volunteer helpers had gone to the Utah state legislature with a group of 5th grade students to experience the democratic process. Previously the students had worked for passage of bills naming the honey bee as Utah's state insect. They had fought for and won a measure mandating child restraints on all automobile passengers under three. They also had passed an anti-nuclear waste dumping measure. So, for these students, the Philo Farnsworth bill was just another such effort, never suspecting that it eventually would lead them on a journey to the nation's capital.

In the 1985–1986 academic year, the staff were in search of a similar project when they heard U.S. Senator Orrin Hatch say, "Isn't it too bad that Utah is authorized two statues in Washington, DC and we only have one, that of Brigham Young." They went to the Ridgecrest students and said, "How about this as a project?" The students were thrilled with the idea.

The students started by searching the Utah history books for the names of any person who was mentioned prominently as having impact on the state or the citizens from the state: one who might have played a major role in national or world events. Twenty-one prominent Utahns were selected. This list was sent to 25 randomly-selected Utah elementary schools. Each school principal was asked to share the review with his or her 4th grade students. Utah history is the social studies emphasis for all 4th grades, so this was the logical group to invite. The schools were asked to choose three Utahns most worthy of honor for designation as statuary. There was a 100% return from their selected schools: 15 from the original list of 21 were mentioned at least once, so this shortened list was submitted to a "bellwether" group of 400 homes in the Sandy, Utah area for additional refinement and focus. From this survey the three names mentioned most often were those of Philo Farnsworth, Eliza R. Snow, and Henry Eyring.

Meanwhile, another group had pre-filed a bill in the state legislature naming J. Willard Marriott for Utah's second statue in the Congress. The Ridgecrest students decided to include the late Mr. Marriott in their third, and final, cross-check, as they had data on him from their other surveys and they were anxious to propose the candidate the Utah citizens wanted.

Ridgecrest's third cross-check was to conduct random face-to-face interviews with adults at downtown Salt Lake City's Crossroads Mall. On January 8, 1986, the students presented the four names to the adults they encountered in the mall. The data from the three cross-checks is presented in the following table:

Polling Results

Name	Check No. 1	Check No. 2	Check No. 3	Total
Philo T. Farnsworth	15 (60%)	161 (54%)	46 (26%)	222 (44%)
Eliza R. Snow	8 (32%)	76 (25%)	42 (24%)	126 (25%)
Henry Eyring	1 (4%)	42 (14%)	38 (22%)	81 (16%)
Willard Marriott	1 (4%)	22 (7%)	48 (28%)	71 (14%)

From the data it was evident to us that the popular choice of the citizens of the state of Utah was Philo T. Farnsworth. Loaded with this and the confidence that their data was as solid as was possible using random sampling techniques, the school looked for a sponsor on the Hill. As luck would have it, when they called the legislative analyst's office, they found that Utah House Representative Donald R. LeBaron from Utah County, was trying to find a group who would do the research to propose a second statue. Armed with a name and data to support that name, the students and staff met with this fine state legislator and found an immediate ally in their mission. He loved the kids and they loved him. They went to work to prepare the proper initiatory paperwork. The joint bill was pre-filed and the school was given a time to make a presentation before the committee.

After some heated debate with Mr. Marriott's supporters, the Farnsworth bill was reported favorably out of committee. The school pushed for floor privileges. They were granted those floor privileges and the students as well as Mrs. Farnsworth were allowed to testify on the House floor. The measure was passed and was sent to the Senate, where it ran into difficulty. A member of the Senate Rules Committee was one of Mr. Marriott's strong supporters, and he held up consideration of the resolution. It died without coming onto the Senate floor. It was late in the session and the school didn't have time to mount a campaign so they went home without passage of their legislation.

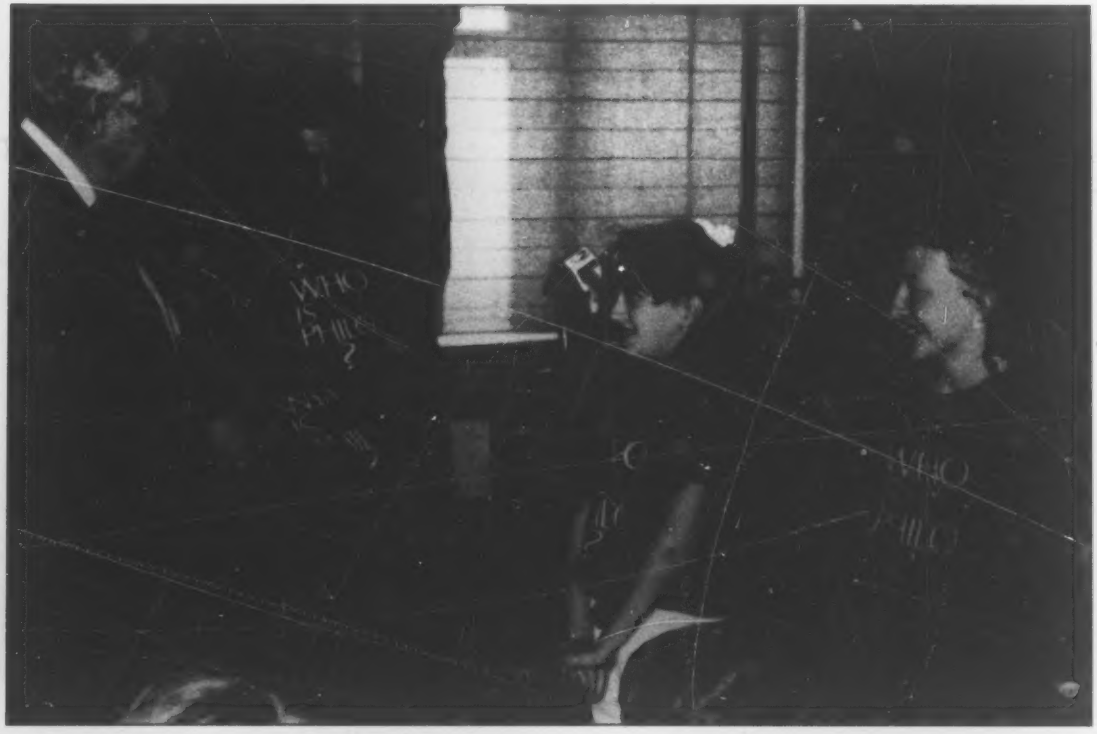
The next year, 1987, the students went to the State legislature early and started the process once again in the House. They were determined to not to fail this time. They found, however, the same scenario. It passed the House, but was bottled up in the Rules Committee of the Senate. After numerous but futile attempts to get the resolution released, the students went to the news media for help. The press started asking why the Rules Committee would not pass out the student's legislation. As the press started to turn up the heat, the Farnsworth resolution soon was released from committee and was passed.

The resolution was sent to Governor Bangerter, who signed the legislation and selected a commission to complete the statue as outlined in the law. The first order of business for the commission was to select a chairman. As principal of Ridgecrest Elementary School, where the effort had begun, I was asked to chair this group of Utahns. The commission then selected members who had expertise in certain areas to be sub-committee leaders within the group. Mr. Gary Smith was dubbed to chair the task to select an artist, while Colleen Bangerter was given the job of overseeing the ceremonies in Washington, DC. The most critical phase was the fundraising effort, and this part was chaired by former Governor

Scott Matheson. Without the Scott's charisma, we wouldn't have made our goal.

Sculptor James Avati was selected from a field of five finalists. His moving interpretation of Dr. Farnsworth's in a pensive mood inspired the Commission's imagination and approval. He was commissioned to do the bronze statue in a dimension of life and one-fourth size. This is the likeness of Philo Farnsworth that now stands in the United States Capitol Building. It was dedicated at a most impressive ceremony presided by Governor Norman H. Bangerter. The list of honored guests featured the Speaker of the House of Representatives, Thomas S. Foley, all of Utah's Washington delegation, selected members of the Commission, Mrs. Farnsworth, Utah church leaders, and a children's chorus from Ridgecrest Elementary School.

The Philo T. Farnsworth Statuary Hall Commission also made the commitment to keep the accomplishments of Philo T. Farnsworth's alive by sponsoring an annual grant to the Sterling Scholar Winner in Science. A small copy of the statue and a cash prize will be given to the winner each year, with the hope that the award will continue to make Philo T. Farnsworth's name synonymous with excellence.



Governor Norman Bangerter assists Dr. Bruce Barnson and two Ridgecrest Elementary school students with the kickoff fund-raising campaign.

APPENDIX VII

ACKNOWLEDGMENTS

The Philo T. Farnsworth Statuary Hall Commission wishes to thank the following individuals and organizations for many types of assistance since inception of the Commission:

Alta Health Strategies
American Express Company
American Investment Bank
Atlas Van Lines
B.P. (Kennecott) Minerals
Blue Cross/Blue Shield
Bonneville International Corporation
Borden-Clover Club Foods Company
Broadcast Television Systems
Bruce Bastian
Evan Call
The Church of Jesus Christ of Latter-day Saints
Cohne, Rappaport and Segal
Dan Jones and Associates
Lee Davidson
Daynes Music Company
Delta Air Lines, Inc.
Deseret Medical Company
The Deseret News
Domino's Pizza Company
Elma "Pem" Gardner (Mrs. Philo T.) Farnsworth
Philo T. Farnsworth family members
Federal Express Company
Fotheringham and Associates
Geneva Steel Company
J. Brent Haymond
Hercules, Inc.
ICPA
Kaye T. Jorgensen
KBYU–TV Station
KSL–TV Station
KTVX–TV Station
Kimberley Clark Company
La Caille
Larson Foundation
Leucadia, Inc.
Melvin E. Lewis
Marriott Corporation
Ray McCuen
Mervyn's Corporation
MHT Architects
Larry H. Miller
Mrs. Franklin (Claire) Murdock
Murdock Travel Company
Northwest Pipeline Company
Novel, Inc.
Pacificorp Foundation
Parsons, Behle and Latimer
Pepsi-Cola Company
Powell Foundation
Reams Food Stores
Ridgecrest Elementary School Teachers, staff and students
Paul W. Salisbury
Sinclair Oil Company
Smith's Management Corporation
Mr. and Mrs. Obert C. Tanner
The Salt Lake Tribune
Grant Thornton
U.S. West Company
Union Pacific Railroad
Unisys West Federal Credit Union
Utah Arts Council
Utah Medical Association
Utah Power and Light Company
Utah Shakespearean Festival
Utah State Historical Society
David VanAlstyne
Vulcraft/Nucor Steel
Wasatch Bronzeworks
WordPerfect Company
Worldbook Company
Gordon Eliot White
ZCMI

The majority of the Philo T. Farnsworth Statuary Hall Commission. Front row, left to right: Bruce Barnson, Ed.D., Chairman, Governor Norman H. Bangerter, Coleen Bangerter, Rep. Donald R. LeBaron. Middle row: Frank McEntire, Frederick Sorensen, Ray Adair, Gene Christensen, Claudia Ward. Back row: Raymond F. Whittenburg, Ed.D., Randall MacKey, LL.B., Marianne Stoddard, Neil Hadlock.

APPENDIX VIII

AUTHORIZING LEGISLATION FOR THE STATUE OF PHILO T. FARNSWORTH

State of Utah
1987 General Session
47th Legislature
House Joint Resolution No. 1
Sponsored by Donald R. LeBaron,
Richard B. Tempest

A Joint Resolution of the Legislature Declaring that the Second Utah Statue in Statuary Hall be of Philo T. Farnsworth; Directing the Governor to Appoint a Commission; Providing for Private Funds to be Raised; Requiring for the Adherence to the Specifications of the Architect of the Capitol; and Providing a Target Date.

Be it resolved by the Legislature of the state of Utah:

WHEREAS, an 1864 Act of Congress created Statuary Hall in the United States Capitol, and provided for each of the states of the Union to place two statues of famous citizens in it;

WHEREAS, a statue of Brigham Young was placed in Statuary Hall in 1950, leaving one space remaining for a statue of a famous Utahn;

WHEREAS, Philo T. Farnsworth, the inventor of television, would be an appropriate representative of the state;

WHEREAS, after conceiving the ideas while a high school student, he spent years of hard work and research developing a working television system which comprised the basic features of today's television systems;

WHEREAS, he and others perfected his invention over many years, and he eventually held many patents in every area of the television industry, from demonstrating the fact that his inventions were crucial to the development of television;

WHEREAS, Philo T. Farnsworth's modest television system has grown to be an extremely important part of modern life, providing news information, education, and recreation to millions of people, and tying together the diverse people of the globe;

WHEREAS, he did not confine his genius to the area of television, but was instrumental in developing radar systems, peaceful uses of atomic energy, and special purpose vacuum tubes;

WHEREAS, a 1934 interference case conclusively established Philo T. Farnsworth as the "Inventor of Television";

WHEREAS, it is only fitting that Utah recognize Philo T. Farnsworth as one of Utah's most brilliant citizens, and honor him with a place beside Brigham Young, whose example of innovation and hard work he so spectacularly followed; and

WHEREAS, the students and teachers of Ridgecrest Elementary School in Salt Lake City have declared themselves willing to spearhead a fundraising campaign to raise the money for the statue from individual and corporate donors.

NOW, THEREFORE, BE IT RESOLVED that the Legislature of the State of Utah declares that the second statue of a famous Utahn in Statuary Hall shall be Philo T. Farnsworth, the inventor of television.

BE IT FURTHER RESOLVED that the Ridgecrest Elementary School raise sufficient funds to cover the entire cost of the statue and incidental expenses, that no state funds need be used.

BE IT FURTHER RESOLVED that the Legislature recommends that the statue be presented to Congress on January 4, 1990, the 94th Anniversary of Utah's admission to the Union.

BE IT FURTHER RESOLVED that the Governor appoint a commission to oversee the selection of a sculptor or sculptors, approve the final statue, and arrange presentation to Congress, to include at least the following members:

(1) two members of the Utah Arts Council;

(2) one member of the faculty of the Ridgecrest Elementary School; and

(3) two legislators.

Commission Chairman Bruce Barnson with members of the Ridgecrest Community Choir.

Wasatch Bronzeworks President Neil Hadlock instructs Mrs. Colleen Bangerter how to hammer apart the ceramic mold of the head of the statue of Philo T. Farnsworth.

APPENDIX IX

PROGRAM FOR THE INSTALLATION OF A SECOND STATUE OF PHILO T. FARNSWORTH IN SALT LAKE CITY, UTAH

A second statue of Philo T. Farnsworth, cast from the same mold created by James Avati, was installed in the Utah State Capitol Building, Salt Lake City, on July 24, 1990.

PROGRAM

Master of Ceremonies Representative Donald R. LeBaron, Utah State House of Representatives

Patriotic singing—Ridgecrest Community Chorus

Welcome—Representative Donald R. LeBaron

RECOGNITIONS

Mrs. Philo T. "Pem" Farnsworth

James Richard Avati, Sculptor

Governor Scott Matheson

Bruce R. Barnson, Ed.D., Chairman of the Philo T. Farnsworth Statuary Hall Commission

REMARKS

Bruce R. Barnson, Ed.D., Chairman

Biographical Sketch—Stephen L. Carr, M.D., Member of Commission

Patriotic singing—Ridgecrest Community Chorus

Remarks—Mrs. Colleen Bangerter

Presentation and acceptance of statue—Governor Norman H. Bangerter

Song—Ridgecrest Community Chorus and Audience Participation, *"Utah, We Love Thee"*

APPENDIX X

BIBLIOGRAPHY

References

A splendid biography of the inventor is by George Everson, *The Story of Television: The Life of Philo T. Farnsworth*, W. W. Norton and Company, New York, 1949.

A fine personal biography by his wife, Elma Gardner "Pem" Farnsworth, entitled *Distant Vision: Romance and Discovery on an Invisible Frontier*, is in the process of being published by Pemberlykent, Salt Lake City. Pem Farnsworth has also authored a 17-page history of Philo, written in 1988, entitled "Life Sketch of Philo Taylor Farnsworth."

Shorter biographies appearing in magazines and books include:

T. Earl Pardoe, *The Sons of Brigham*, pp. 318-23, Brigham Young University Alumni Association, Provo, Utah, 1969.

Dennis May, "Philo T. Farnsworth: The Father of Television," BYU Today, pp. 33-36, Provo, Utah, May 1989.

Thomas Ropp, "The Real Father of Television," *Arizona Magazine*, as reprinted in *Deseret News Magazine*, Salt Lake City, Utah, October 21, 1984.

Mitchell Wilson, "Farm Boy Makes Good," *Collier's*, pp. 19 ff., October 3, 1936.

Mitchell Wilson, "The Strange Birth of Television," *Reader's Digest*, pp. 19-20, February, 1953.

Newspaper articles that bear on aspects of Farnsworth's life and experiences appear in the *Deseret News* Salt Lake City, September 24, 1936; January 19, 1939; March 12, 1971; August 27, September 7, October 28, 1977; August 20, 1981; September 11, 1985; March 28, November 16, 1988; February 26, June 15, 1989. Articles have appeared in the *Salt Lake Tribune* on the following dates: June 30, July 2, 1953; March 13, 1971; April 22, 1988; April 30, 1989.

Farnsworth family history is given in *Farnsworth Memorial II*, (Second Edition of the Farnsworth Memorial, published in 1987 by Moses Franklin Farnsworth), revised by R. Glen Nye, 1974. Genealogical data from the Family History Library, Church of Jesus Christ of Latter-day Saints, Salt Lake City, is helpful, as are ward records and church censuses in the LDS Historical Library-Archives, Salt Lake City. Biography of the inventor's grandfather is in Andrew Jenson, "Philo Taylor Farnsworth," Latter-day Saints *Biographical Encyclopedia*, 4 volumes, 1 522-23, 3:370, Salt Lake City, Utah.